



**VENTURE CAPITAL FUNDS  
ANNUAL REPORT  
JULY 2002**



# MARYLAND

DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT

# STATE OF MARYLAND VENTURE CAPITAL FUNDS

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Annual Report  
June 30, 2002

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## Director's Message

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As my first full year in the position of Director of the Investment Financing Group comes to an end, I would like to take you through some of the highlights of the many new exciting changes made, challenges faced and goals achieved over this past fiscal year.

Since its formal inception in 1994, an elite, but small group of highly qualified individuals, whose backgrounds are primarily in the private sector, has staffed the IFG. During this fiscal year we were finally able to bring staffing levels up to par with the flow of applications we had been receiving. Thus we were able to provide a greater level of due diligence on business plans and develop a more methodical approach to our decision making process.

Over the past year the IFG invested \$8.0 million in 33 separate companies. Roughly half of these companies were representative of the life sciences sector and the other half in information technologies, primarily software companies. Of the 16 Enterprise investments made, four had also received Challenge funding during the fiscal year. We made Challenge investments in 21 individual companies during the year. (See Page 4)

The Program has now invested in over 170 businesses with proprietary technologies. Of those companies, over 75 percent have remained in business for more than five years. This is truly an exceptional track record given the nature of this type of investing.

### **2002 Highlights**

Some highlights from our portfolio companies for the year are as follows:

October 2001 and March 2002 - MetaMorphix announced and finalized an agreement to purchase the AgGen division of Celera, Inc. in exchange for \$30 million in stock. Although no independent third party verification has been made regarding this valuation, DBED believes that this announcement has increased the value of its investment.

October/November 2001 - DBED liquidated its position in Meridian Medical Technologies. The investment, made in fiscal year 1997, yielded a payout of \$544,149 on a total investment of \$289,930.

November 2001 - Avalon Pharmaceuticals was able to attract \$70 million in a B Round of financing. DBED was able to participate in this round and has seen a modest increase in value of its investment.

November 2001 - Deloitte & Touche Technology Fast 500 named Advertising.com, a Rising Star in the ranking of the fastest-growing technology companies in the United States and Canada. Ranked fourth among the 25 Rising Star winners, Advertising.com's revenues have increased over 74,000 percent since the company's inception in 1998.

December 2001 - Ernst & Young, in conjunction with MdBIO, delivered their report on the state of venture capital investing in the Life Sciences sector. The report bore out already understood characteristics in the

market place that indicate a dearth of private investment in life sciences companies seeking funding in the \$2 million - \$10 million range. The report's recommendation was for the State to invest monies in a private venture capital firm focused solely on life sciences companies in Maryland seeking this type of funding.

February 2002 and May 2002 – The Investment Financing Group sponsored two investment forums for its portfolio companies. The Challenge Investment Forum, held in February, included technology companies seeking additional angel investment. In May, the IFG sponsored its second Annual Early Stage Bio Venture Forum. Biotech companies seeking angel or venture capital funding presented.

February 2002 – During budget hearings concerning appropriations for programs within the Department of Business & Economic Development, Secretary David S. Iannucci recognized the critical role the Investment Financing Program plays in the growth and development of the State's economy by investing in early-stage technology companies.

March 2002 – Neoreach, a Challenge Investment company, merged with Mobilepro Corp. (OTC-BB-MOBL), a developer of mobile information solutions for business-to-business communications. The transaction resulted in the exchange of thirteen million shares of the capital stock of Neoreach for thirteen million shares of the common stock of Mobilepro on a one-to-one basis. Neoreach continues to exist and operate as a wholly owned subsidiary of Mobilepro.

April 2002 -The Technology Council of Maryland announced 20/20 GeneSystems, Inc. as the recipient of the Bioscience Product of the Year award for its Multi-blot kit for protein gels.

April 2002 - Cylex received FDA approval for their assay for use in monitoring immune suppression in organ transplant patients.

May 2002 - The Mid-Atlantic Venture Association's, Capital Connections 2002, accepted 15 IFG portfolio companies among its 50 presenting companies (30 percent). In this region's premiere venture capital event IFG's programs garnered a tremendous amount of positive publicity.

June 2002 - The Maryland Incubator of the Year Awards honored seven companies, four of which have received Challenge investments, with one company also receiving Enterprise funding. The four companies and respective awards are: Reactive Nanotechnologies for Most Promising Tech Transfer; Chesapeake PERL for Biotech/Life Science; Agentsmith for Information Technology; and In Vitro Technologies for Graduating Incubator Company.

June 2002 - Chesapeake PERL gained national recognition when Fortune Magazine published its Cool Companies 2002. Fortune Magazine selected PERL as one the nation's coolest biotech companies for its protein larvae manufacturing process.

### ***Equity Positions***

DBED currently holds equity positions in three publicly traded companies: ID Biomedical, Immersion, Inc. and Hoovers. These are successors to HT Medical Systems, Intellivax and Knowledge Link, respectively.

As of June 30, 2002, DBED's positions in these investments have become liquid. However, given the current under-valued status of our positions, we believe that it is in the best interests of the state to hold these equities until such a time as the markets begin to exhibit strength. Management will review on an ongoing basis and make determinations as to whether to liquidate or retain positions in these companies based on market conditions.

### ***Looking Forward***

As in the past, IFG will continue to focus on the earliest of early-stage companies. We remain committed to the essence of the program developed by our predecessors and trust in our abilities to seek out the best emerging technology companies in the state of Maryland and invest in them.

As always, we will continue to focus on making investments in companies that exhibit strong intellectual capital, as evidenced by patents (or by those pending) and by proprietary positions that pose barriers to entry. We will also continue to evaluate companies based on the following characteristics: creativity, defensible markets, liquidity, management, proprietary advantage and scalability.

During the next fiscal year it is expected that the year will begin slowly as the private markets exhibit a seasonal slowdown in the months of July and August. However, after Labor Day, business will return to normal with an influx of business plans and venture capital activity.

Through the balance of the fiscal year, it is our expectation that the quality of business plans will remain high and all of the fiscal year 2003 appropriation will be encumbered and only the most compelling of business models will obtain state investment funding.

We will also face the ongoing challenge of marketing companies deserving of funding to the private venture capital community. With the migration of private venture capital firms away from seed stage investing, we will continue to develop relationships with firms that offer not only funding but management expertise and coaching, to guide these embryonic companies through this very challenging economic climate.

And as always, we expect to persevere, and continue to fulfill our mission of seeding the market with some of the best and most exciting technology that Maryland has to offer. It is our hope that the companies we invested in during this past fiscal year will yield some of the best investments made in the history of our programs.

We hope that we can say that again next year as we enter our 10th year as one of the country's premiere state funding programs for seed stage venture capital investing.

Best Regards,

Tom Bodnar, Director  
Investment Financing Group  
Maryland Department of Business & Economic Development

**INVESTMENT FINANCING APPROPRIATION - FY 2002**

**Enterprise Investment Fund Commitments**

Agentsmith	Baltimore City	\$ 300,000
Aptus Pharmaceuticals	Montgomery	\$ 500,000
Artifact Software	Baltimore City	\$ 200,000
Atto Bioscience	Montgomery	\$ 500,000
BioSET	Prince Georges	\$ 250,000
Bluefire Security Tech	Baltimore County	\$ 400,000
Chesapeake PERL	Prince Georges	\$ 350,000
CodeRyte	Montgomery	\$ 225,000
Functional Genetics	Montgomery	\$ 250,000
MaxCyte	Montgomery	\$ 200,000
Navtrak	Wicomico	\$ 350,000
Paratek	Howard	\$ 350,000
Platform Logic	Howard	\$ 500,000
Sequella	Montgomery	\$ 500,000
Sourcefire	Howard	\$ 550,000
Yafo Networks	Anne Arundel	\$ 250,000
<b>Total</b>		<b>\$5,675,000</b>

**Challenge Investment Program Commitments**

20/20 GeneSystems (2)	Montgomery	\$ 100,000
Agentsmith (3)	Baltimore City	\$ 125,000
Artifact Software	Baltimore City	\$ 100,000
bConvergent	Montgomery	\$ 50,000
BioMat Sciences (2)	Montgomery	\$ 100,000
Bluefire Security Tech	Baltimore County	\$ 50,000
Business Devices	Howard	\$ 50,000
DVIP Multimedia Inc.	Montgomery	\$ 100,000
EKA Systems (2)	Montgomery	\$ 100,000
Grey Pilgrim (2)	Montgomery	\$ 150,000
Harta Instruments	Montgomery	\$ 50,000
Infinity Pharmaceuticals	Montgomery	\$ 50,000
Ipsil (2)	Montgomery	\$ 150,000
LearnScape	Prince Georges	\$ 50,000
Metastatin	Montgomery	\$ 50,000
Netta Systems	Howard	\$ 50,000
New Hope Pharmaceuticals	Montgomery	\$ 50,000
Phoenix S&T Technologies (3)	Cecil	\$ 150,000
Platform Logic	Howard	\$ 100,000
Plethora Technologies (2)	Howard	\$ 100,000
Reactive NanoTechnologies	Baltimore City	\$ 100,000
<b>SubTotal</b>		<b>\$1,825,000</b>
Dingman Center for Entrepreneurship	Prince Georges	\$ 500,000
<b>Total</b>		<b>\$ 2,325,000</b>
<b>Total for Enterprise &amp; Challenge Commitments</b>		<b>\$ 8,000,000</b>

(#) - Denotes number of investments made during fiscal year.

**Description**

This is truly a State-sponsored venture capital fund, whereby the State/DBED makes equity investments in early-stage, high technology firms who are seeking initial infusions of private equity, usually in the \$2 million to \$10 million ranges. The legislation limits the State's total equity share in any given firm to 25 percent. The Enterprise Investment Fund requires a 3:1 outside investor co-match through a sophisticated investor (a proven venture capital firm, a corporate strategic partner and/or a proven angel investor). The interpretation of the term "sophisticated" would be at the sole discretion of DBED's Investment Financing Group.

The program also provides funds in the amount of \$150,000 to \$500,000 to be made in any given investment. As an independent control mechanism for this investment initiative, an outside Advisory Board comprised of nine members has been established to review these investments. The terms of DBED's investment are for a maximum of 15 years and DBED requires the firm to retain its principal place of business within the State of Maryland for a period of five years. In the event the firm moves outside the State, the agreement states that DBED has a put to the firm that they repay the investment at cost plus 10 percent, or fair market value, whichever is higher.

**Performance**

The Enterprise Investment Fund has completed equity investments into 52 individual firms. The cost basis of these investments thus far has been \$19.2 million since January 1, 1994. The program generated in excess of \$47 million as a result of the Visual Networks and Gene Logic stock sales. As of this writing, four firms have gone public and five have been acquired by either a publicly traded firm or a larger privately held firm. Additionally, one venture liquidated its assets.

The Investment Financing Group has exited via the sale of held securities in all four public issues and two of the five acquisitions. Through June 30, 2002 DBED has realized \$48 million in proceeds to be reapplied to the Enterprise Investment Fund. Based on general guidelines used by other venture capital firms, the fair market value for the balance of DBED's holdings is approximately \$16 million, bringing the total fair market value of the individual company investments to approximately \$64 million as of June 30, 2002. The internal rate of return for the Enterprise Investment Fund from inception through June 30, 2002 was 32 percent annually.

The following descriptions of the Enterprise Investment Fund recipients were provided by the company.

# ENTERPRISE INVESTMENT FUND OVERVIEW

## FAIR MARKET VALUE (FMV) SUMMARY, June 30, 2002 (unless otherwise specified)

Company	Investment Date	Investment (\$)	Realized Value (\$)	Status	# of Employees	Market Capitalization
eVIN, Inc. (formerly VinNet, Inc.)	01/16/97	250,000	36,447	Sold	5	-
Gene Logic, Inc.	4/17/96	500,000	17,169,307	Sold	226	394,400,000
Guilford Pharmaceuticals, Inc.	05/11/94	250,000	536,092	Sold	254	280,200,000
Hoover's (aka KnowledgeLink)*	6/23/98	550,000	324,205	Public	268	69,300,000
Immersion, Inc. (aka HT Medical Systems, Inc.)*	11/15/95	250,000	262,833	Public	162	74,900,000
ID Biomedical (aka Intellivax, Inc.)*	02/22/97	300,000	294,808	Public	80	150,100,000
Meridian Medical Technologies	02/20/96	289,930	544,149	Sold	339	71,300,000
NetBalance, Inc. (formerly NetSolv)	3/26/97	250,000	22,948	Liquidated	0	-
NewComm Net	04/16/99	499,999	566,666	Sold	47	-
Visual Networks, Inc.	11/02/94	250,000	28,133,879	Sold	325	127,500,000
<b>Sub Total</b>		<b>3,389,929</b>	<b>47,891,334</b>		<b>1,706</b>	<b>1,167,700,000</b>
Advanced Bio Nutrition (ABN - ex-Martek)	10/16/01	250,000	250,000	Private	6	2,000,000
Advertising.com (TeknoSurf.com)	03/06/00	499,991	1,221,005	Private	155	70,000,000
Antaeus Group*	12/10/96	250,000	250,000	Private	14	2,000,000
Artifact Software* (1)	06/18/02	300,000	300,000	Private	10	3,300,000
Atto Biosciences	05/31/02	500,000	500,000	Private	39	4,825,000
Avalon Pharmaceuticals	10/15/01	500,001	690,951	Private	57	80,000,000
BioSET	05/01/02	250,000	250,000	Private	7	2,990,000
Biosynexus, Inc.	12/29/99	500,000	1,106,250	Private	34	15,000,000
Bluefire Security Technologies*(1)	03/28/02	450,000	450,000	Private	3	7,000,000
Chesapeake PERL*	11/19/01	500,000	500,000	Private	8	1,750,000
Claragen, Inc.	08/15/00	425,005	425,006	Private	6	4,000,000
CodeRyte (1)	06/18/02	225,000	225,000	Private	7	2,500,000
CyberSystem Technologies, Inc.	02/10/98	250,000	-	Private	0	4,000,000
Cylex Inc. (Biotechnology Transfer)*	11/26/01	575,000	599,000	Private	18	6,100,000
CytImmune Sciences, Inc.	03/25/97	300,000	300,000	Private	12	1,500,000
FASgen, Inc	12/29/00	500,000	500,000	Private	4	3,000,000
Functional Genetics, Inc. (1)	12/18/00	750,000	750,000	Private	19	10,000,000
Healthware Solutions International	11/12/94	250,000	-	Private	0	10,300,000
Internet Cargo Services, LLC*	07/30/98	550,000	527,473	Private	15	10,000,000
Intradigm Corporation*	06/11/01	300,000	300,000	Private	13	1,250,000
Lion Pharmaceuticals, Inc.	11/04/97	250,000	-	Private	0	5,000,000
MaxCyte	02/28/02	200,000	200,000	Private	16	6,385,000

# ENTERPRISE INVESTMENT FUND OVERVIEW

## FAIR MARKET VALUE (FMV) SUMMARY, June 30, 2002 (con't) (unless otherwise specified)

Company	Investment Date	Investment (\$)	Realized Value (\$)	Status	# of Employees	Amount of Capital Investment
MetaMorphix, Inc.	12/27/96	500,000	1,050,000	Private	15	32,000,000
Navtrak	06/30/02	350,000	350,000	Private	32	5,000,000
Neuralstem Biopharmaceuticals	08/14/00	500,000	400,767	Private	4	19,999,998
Nextone Communications*	03/10/99	200,000	85,072	Private	20	17,920,000
Osiris Therapeutics, Inc.	09/22/94	500,000	104,160	Private	80	9,258,667
Panacos Pharmaceuticals, Inc.	12/29/00	250,000	250,000	Private	18	8,000,000
Paratek Microwave* (1)	03/19/02	575,000	475,893	Private	74	35,000,000
PEM Technologies	12/06/01	250,000	250,000	Private	7	2,200,000
Platform Logic, Inc.* (1)	05/21/02	350,000	350,000	Private	12	2,500,000
Psychiatric Genomics, Inc.	11/08/01	500,000	500,000	Private	30	22,000,000
QRSI	03/14/97	250,000	-	Private	0	6,000,000
RF Technologies, Inc.*	07/29/99	249,990	270,612	Private	5	1,500,000
Sequella (1)	03/19/02	500,000	500,000	Private	13	3,000,000
Solution Technology International, Inc.*	03/13/00	350,000	350,000	Private	9	3,500,000
Sourcefire, Inc.	02/01/02	550,000	550,000	Private	28	7,500,000
The Technology Group	10/22/98	249,999	-	Private	0	5,000,000
Vapotherm, Inc.*	07/20/01	250,000	250,000	Private	10	1,750,000
Wisor Telecom*	03/22/00	400,004	785,187	Private	35	20,000,000
Xspeedium.com, Inc. (Bond Systems)*	03/25/99	250,000	-	Private	0	7,500,000
Yafo Networks	04/22/02	250,000	250,000	Private	36	61,000,000
<b>Sub Total</b>		<b>\$ 15,849,990</b>	<b>\$ 16,116,376</b>		<b>871</b>	<b>\$ 523,528,665</b>
<b>Total</b>		<b>\$ 19,239,919</b>	<b>\$ 64,007,710</b>		<b>2,577</b>	<b>\$ 1,691,228,665</b>

Overall Rate of Return	332.68%
Annual Rate of Return	32.17%
Leverage Multiple	88.01x
Women/Minority Percentage	25.00%
* - Graduated from Challenge Program	34.62%

(1) Note - Dates shown indicate date commitment made. Actual closing dates have occurred after the end of the fiscal year end.

**Advanced BioNutrition Corporation**  
Columbia, MD

*www.advancedbionutrition.com*  
MD Employees: 14

**Management Team**

Dr. David Kyle  
President and CEO

David Alldredge  
Chief Operating Officer

John Piechocki  
Director of Manufacturing

Dr. F.C. Thomas Allnutt  
Director of AquaBiotechnology

Mr. Larry Giessinger  
Director of Sales

Al Cunniff  
Director of Corporate  
Communications

**Other Co-Investors**

Eastbourne Capital  
Sherbrooke Capital Partners

**Cost to State of Maryland**

\$250,000

**Current Fair Market Value**

\$250,000

**History**

ABN was spun out from Martek (MATK) in Q4 of 2001 with a mission to commercialize its science-based aquaculture products. ABN in-licensed over 40 issued patents pertaining to MATK's animal products and technology. ABN is developing its next generation of products, and has filed several fundamental broad-ranging patents in the aquaculture disease control area.

**Products**

Advanced BioNutrition (ABN) is the first of a new breed of AquaBiotech companies. It is a science-based, business-driven animal health and nutrition company with existing proprietary products and a strong pipeline of new products. ABN markets its AquaGrow line of nutritional enrichment feeds to hatcheries and grow-out facilities throughout the world. AquaGrow products have been tested, proven to be beneficial, and are well accept-

ed by customers. Proven value at a competitive cost puts AquaGrow products ahead of the competition. Products in this line include AquaGrow DHA, AquaGrow Advantage, AquaGrow Enhance, AquaGrow Green, and AquaGrow ARA. ABN's PROTECT™ product line, presently under development, includes probiotics, immunity enhancers, and edible vaccines designed to eliminate the need for antibiotics in agriculture.

**Competition**

ABN's nutritional products are from microalgae, a sustainable plant resource. Competing products are based on fish oil, a non-sustainable resource whose price is on the rise. In addition, scientific publications have demonstrated the superiority of ABN's products over these competitive products. There is no direct competition for the disease control product line under development.

**Events**

In March 2002, ABN raised an additional tranche for the Series A financing, securing a total of \$3.6 MM.

ABN opened its European office May 2002 in Brighton UK

In June the company added Daniel R. Glickman, former U.S. Agriculture Secretary, Dr. Charles Arntzen, oral vaccine and plant biology expert, and former Dupont Agriculture executive William F. Kirk to its Board of Directors.

David Alldredge was hired as Chief Operating Officer.

**Advertising.com**

Baltimore, MD - New York, NY - San Francisco, CA - London, UK

*www.advertising.com*  
MD Employees: 155

**Management Team**

Scott Ferber  
CEO and Co-Founder

John Ferber  
Chief Internet Officer and Co-Founder

Gar Richlin  
Chief Operating Officer

Mike Woosley  
Chief Financial Officer

Todd Walderman  
Chief Technology Officer

**Other Co-Investors**

Reuters Group PLC

America Online, Inc.

WPP Group plc

WorldCom Venture Fund

Grotech Capital Group

New Enterprise Associates

**Cost to State of Maryland**

\$499,991

**Current Fair Market Value**

\$1,221,005

**History**

Three years ago, one of the founders moved into ad serving and tracking, with the development of Click-Tracker a custom-designed Web visitor and sales tracking software. With over 2 billion ads served and \$75 million in e-commerce sales, the Click-Tracker software laid the foundation for Advertising.com's present-day marketing production system. Today, Advertising.com serves and tracks 3 billion ad impressions per month in a variety of electronic media, and provides other consultative services for Internet advertisers.

**Products**

Advertising.com serves and tracks ads in a variety of electronic media, including web publications, electronic mail, software products, and wireless devices. Numerous Fortune 100 companies have benefited from Advertising.com's products and services. The Company fulfills

approximately 200 campaigns per month. Advertising campaigns are delivered through an integrated package of content placement solutions and multiple delivery channels. The Company's AdLearn Technology is one of the most sophisticated commercially available systems for the targeting of electronic advertisements.

Advertising.com uses its delivery technology to improve the performance of online marketing campaigns by offering a rich portfolio of targeting options. Advertisers benefit from the ability of the technology platform to "learn" the best ad placement, and to apply this knowledge in real-time to greatly improve an advertiser's performance.

**Competition**

Public Competitors include Doubleclick, L90, Twenty-Four Seven Media and Engage. There are three private companies in the industry of substantial pres-

ence: Advertising.com, Phase 2 Media, and Real Media.

**Events**

Advertising.com, Inc. acquired Dayrates, Scandinavia's largest Internet direct marketing company in March 2002. Dayrates will merge with Advertising.com's London-based subsidiary, Advertising.com International. The merger will increase Advertising.com's international presence substantially to include Dayrates' offices in Norway, Sweden, Denmark and Germany, in addition to Advertising.com's recently launched operations in France.

In November 2001, the Deloitte & Touche Technology Fast 500, named Advertising.com, Inc. a Rising Star in the ranking of the fastest-growing technology companies in the United States and Canada. Ranked fourth among the 25 Rising Star winners, Advertising.com's revenues have increased over 74,000% since the company's inception in 1998.

**Antaeus Group**

Baltimore, MD

*www.antaeusgroup.com*

MD Employees: 14

Management Team	Other Co-Investors	Cost to State of Maryland
William D. Norton President and CEO	David Hungerford	\$250,000
Scott Robuck Chief Financial Officer	Ralph Gibson	<b>Current Fair Market Value</b> \$250,000
Tim Pickering VP, Marketing & Sales	Jay P. Cook, Jr.	
	MD Small Business Development Financing Agency (MSBDFA)	
	Community Development Fund (CDV)	

**History**

Antaeus Group was established in 1990 by a dentist as a response to the 1990 Clean Air restrictions. As an alternative to traditional medical incinerators, the dentist worked with an engineering firm to develop a device that would eliminate emissions of toxic chemical compounds and sterilize solid waste. The Antaeus Group has developed a new technology utilized by the health care industry to safely and economically dispose of infectious medical waste. This technology can be transferred to other industries for destruction of (1) laboratory waste, (2) out-dated pharmaceutical products, and (3) sensitive documentation stored on information bearing surfaces on all types of media including microfilm, microfiche, magnetic tapes, and CDs.

**Products**

Antaeus currently has two distinct product designs, one for the medical waste industry and a

software modified system targeted toward the documentation/media destruction market. The Company's initial product, the SSM (Steam Sterilizer Macerator), processes on site red bag medical waste. It emerges as a confetti-like substance that is non-infectious, non-hazardous, and non-recognizable, satisfying OSHA's definition for non-regulated waste. Most hospitals will reduce their medical waste processing cost by 20% - 50%. Antaeus also utilizes this technology under the name IBS Destroyer (Information Bearing Surface) to target the document/media destruction market. The IBS Destroyer can destroy any information-bearing surfaces such as magnetic tapes, blueprints, CD-ROM, DVD, microfiche, high density images, photographs and negatives, toner cartridges, and video tapes.

**Competition**

Increasing; probably about 20 other firms that have developed alternatives for addressing med-

ical waste issues. Competition for medical waste disposal comes primarily from the following competing technologies: on-site incineration, waste haulers, and alternative treatments such as chemical disinfection and heat treatment. Competition in the classified media industry is limited to shredding equipment and/or companies that have mobilized shredders. For electronic media, the only two technologies that are used with confidence are incineration or degaussing/demagnetizing.

**Events**

The company signed a multi-million dollar distribution agreement with Hitachi Medical to supply it with medical waste destruction equipment.

Installed equipment at Johns Hopkins School of Medicine, Becton Dickinson, Illinois Dept of Public Health, U.S Air Force, U.S. Navy, Red Cross (MD) and Quest Diagnostics.

**Artifact Software**

Baltimore, MD

*www.artifactsoftware.com*

MD Employees: 10

Management Team	Other Co-Investors	Cost to State of Maryland
Mark Wesker President and CEO	Confidential	\$300,000 pending
Greg Heard CFO/SVP Operations		<b>Current Fair Market Value</b> \$300,000
Jasen Fici CTO/SVP Marketing		

**History**

The principals successfully exited their last venture, Sequoia Software (a developer of products and services for the portal software marketplace), selling that company to Citrix in an all-cash deal. Several months later, the chief technical officer devised a plan that addresses a need for developers to streamline their coding and business processes.

**Products**

Artifact is an enterprise software company that has targeted the growing market for software reuse solutions. The Artifact Management Software is a pragmatic approach that serves the needs of both of the company's targeted constituencies: the developer and the development manager. Proven and successful concepts are taken from the code sharing Web sites to provide developers with a solution that does not force them to change their behavior, but makes it easy to leverage software artifacts. To that, the company is adding additional collaborative and communication capabilities that are critical to solving this problem, yet cannot be fulfilled by a simple Web site.

**Competition**

Companies such as Logic Library and Rational provide products that are more service-oriented or have a tendency to deal with more proprietary solutions.

**Events**

DBED closed on \$100,000 of Challenge funding in August 2002 and expects to close in the near future on additional Enterprise funding as part of a Series A round involving multiple co-investors.

**Atto Bioscience, Inc.**

Rockville, MD

[www.atto.com](http://www.atto.com)

MD Employees: 39

Management Team	Other Co-Investors	Cost to State of Maryland
Derek Woods, Ph.D. CEO	Emerging Technology Partners	\$500,000
Gary Brooker, Ph.D. CSO and Founder	Alexandria Equities LLC	<b>Current Fair Market Value</b>
Gloria Zak Chief Financial Officer	MdBio	
Joel Jessee VP, Research & Development		\$500,000
Jeffrey Brooker VP, Operations		

**History**

Atto Bioscience (Atto) is a 16-year-old biotechnology company, founded by Dr. Gary Brooker and his son Jeffrey. Atto specializes in optical instrumentation and reagents for the analysis of reactions taking place in single living cells. Atto's patented products are used in basic research, drug discovery, toxicology and clinical diagnostics. The company has a portfolio of intellectual property rights that include patents developed through its own research and an exclusive worldwide license with the University of California for an assay technology used extensively in modern drug discovery efforts. Currently, there are 5 issued patents and 6+ pending or in preparation.

**Products**

The Pathway HT system was designed to overcome the challenges of high throughput live-cell bioimaging. The system provides high-resolution full spectrum confocal imaging of single

cells and allows for kinetics and ratiometric analysis. The laser-free design of the Pathway HT system allows flexibility in the choice of fluorescent tags used in biological assays. Pathway is not limited by laser lines and can be used at virtually any wavelength from UV to near IR. The Pathway system allows for simultaneous kinetic imaging of multiple fluorescent dyes in individual living cells.

The CARV module attaches to microscopes for confocal viewing (similar to the concept of a CAT scan) of fluorescent specimens without the use of a laser. This system performs confocal microscopy with the simplicity of standard fluorescence microscopy. The module is solid with a software package that allows reconstruction of three-dimensional images of cells. CARV is the only non-laser full spectrum confocal microscopy product on the market. Atto can thus offer greater flexibility and a significant price advantage over the laser confocal systems sold by several other manufacturers.

**Competition**

The Atto product line is either unmatched by competitors or has significant price performance advantages over current competitors. Atto products are currently not widely marketed to the customer base and thus the advantages of Atto products are, for the most part, not well appreciated by the general customer base.

**Events**

Atto Bioscience has received a \$600,000 award from the Defense Advanced Research Agency (DARPA) to apply its imaging platform and expertise in molecular and cell biology to develop olfactory receptor-based biosensors for real-time detection of agents of interest to the Department of Defense.

**Avalon Pharmaceuticals**

Gaithersburg, MD

[www.avalonrx.com](http://www.avalonrx.com)

MD Employees: 57

Management Team	Other Co-Investors	Cost to State of Maryland
Kenneth Carter CEO	Oxford Bioscience Partners Forward Ventures (San Diego)	\$500,001
Thomas G. David General Counsel and Director of Operations	GIMV (Belgium) Altamira (Canada)	<b>Current Fair Market Value</b>
Garry Lessing Chief Financial Officer	Gene Fund Ariane Fund CDP Sofinov Emerging Technology Partners	

**History**

Formerly known as Therapeutic Genomics, Avalon Pharmaceuticals was established to develop innovative genomic technologies along with designated partners to identify cellular targets for novel cancer drugs. The company, along with two medical institutions, has initially targeted prostate, colorectal, breast and lung cancer as possible focal points.

**Products**

The company intends to identify candidate tumor suppressor genes in specific cancers. Typically, cell lines will indicate either translocation or deletion of a particular chromosome. Using databases consisting of genomic sequences, the company will construct a genomic map in the region in question. This approach will couple both spectral karyotyping (SKY) and fluorescence in-situ hybridization (FISH) analysis to define the deletion. Functional cloning may be used to test for biological activity.

**Competition**

Other methodologies have been employed to address the suppression of specific cancers.

**Events**

The State of Maryland participated in the Series B \$70 million investment round which closed October 2001.

In the Summer of 2002, the company announced the future relocation of its corporate headquarters to Germantown. The new facility will be approximately 55,000 square feet in size and will be exclusively devoted to Avalon's research and development.

**BioSET**

College Park, MD

[www.biosetinc.com](http://www.biosetinc.com)

MD Employees: 7

Management Team	Other Co-Investors	Cost to State of Maryland
William Mavity Chairman and CEO	Boston Scientific	\$250,000
Tom Roueche VP, Business Development and General Manager	The Vertical Group	<b>Current Fair Market Value</b>
Paul Zamora, Ph.D VP and CSO		\$250,000
Linda Finn VP, Finance and Administration		

**History**

BioSET was formed March 2001 through a “spin out” to capitalize on over ten years of research and development in advanced biocompatible coating technologies in the medical device industry. BioSET was “spun out” by a team of InnerDyne, Inc. management from the merger of Inner Dyne, Inc. with United States Surgical, a division of Tyco Healthcare Group, LP.

**Products**

BioSET has developed novel and proprietary methods to chemically and mechanically alter surface properties for siloxane deposition, creating molecular attachment sites and bonding heparin to a variety of common medical device substrates. These processes range from simple wet chemistry “dip” techniques to gas plasma surface etching and deposition, either sin-

gularly or in combination, to achieve a designed outcome. The company is focused in the areas of thrombo-resistant heparin coatings for medical devices, biocompatible diffusion barriers for controlled efflux of localized bioactive agents, and tissue engineering applications to enhance cell migration and growth attachment.

**Competition**

Numerous product offerings exist from suppliers of biocompatible coatings to address lubricity and thrombogenicity. These products vary in effectiveness, complexity of manufacture, and cost. Competitors include, Baxter Lifesciences, Carmeda, and Surmodics. The competition for drug delivery on stents for restenosis is much more intense with the likes of Angiotech/Boston Scientific/Cook, Cordis, Guidant, Abbott, and

Medtronic. Many of these companies have recently begun human clinical trials. A number of these same companies are offering stent-grafts to address the market for less invasive repair of abdominal aneurysms. These products are logical candidates for biocompatible coatings and BioSET has specific programs involving coatings that are aimed at addressing this need.

**Events**

The State of Maryland participated in the company’s Series A round of funding which raised approximately \$3MM.

Originally located in Sunnyvale, CA, BioSET moved its headquarters to the University of Maryland TAP incubator in the Spring of 2002.

**Biosynexus**

Gaithersburg, MD

MD Employees: 34

Management Team	Other Co-Investors	Cost to State of Maryland
Gerald W. Fischer, M.D. President & CEO	Hilal Capital Management	\$500,000
James Mond, M.D., Ph.D. Chief Scientific Officer		<b>Current Fair Market Value</b>
Jeff Fischer Chief Financial Officer		\$1,106,250

**History**

Biosynexus is a biopharmaceutical company focused on preventing and treating hospital acquired infections with a diversified portfolio of products and a pipeline to sustain continued growth.

**Products**

The lead product is known as BSYX-A110. It has completed GMP manufacturing. Phase I safety trials in adults have been completed and Phase I/II trials are currently underway. The product is a highly specific antibody that binds with a single antigenic determinant that provides protection against the two most common types of staph bacteria. A second product, Lysostaphin, is ready for GMP manufacturing and clinical trials are anticipated to begin in late 2002/early 2003. Lysostaphin is an enzyme that kills staph bacteria. In pre-clinical testing it has been shown to be the most effective treatment for certain severe staph infections. Lysostaphin was in-licensed in late 2000.

**Competition**

Antibiotics are generally the only other remedies on the market, but staph can become resistant to these drugs after some time.

**Events**

The State of Maryland participated to its maximum level in the Series A and was therefore unable to participate in further financing.

Biosynexus entered into a strategic collaboration with Applied Molecular Evolution to optimize AMzE’s HU96-110, a treatment for staphylococcal bacterial infection, AME successfully optimized HU96-110 in 2001.

**Bluefire Security Technologies**

Towson, MD

*www.bluefiresecurity.com*

MD Employees: 3

<b>Management Team</b>	<b>Other Co-Investors</b>	<b>Cost to State of Maryland</b>
Mark Komisky CEO	Steve Walker & Associates	\$450,000
Dennis Komisky Chief Technology Officer	Maryland Angels Council	<b>Current Fair Market Value</b>
Will Clemons Chief Financial Officer	J K & B Capital	

**History**

Bluefire Security Technologies is the first company to develop a next generation smart firewall for mobile wireless devices. Bluefire's proprietary security software is designed to operate on every PDA (personal digital assistant), smartphone, notebook and other portable electronic device utilizing wireless networking technology, either as part of an enterprise network or peer-to-peer (P2P) communications. The smart firewall uses Bluefire's patent pending location sensitive security profile system to automatically increase or decrease the security levels depending on the location of the individual using the device (at home, in the office, or in public spaces).

**Products**

The Bluefire solution requires enhancing wireless devices to protect themselves from unfriendly, fraudulent, and hostile connections, even when they are not con-

nected to the enterprise. For more sophisticated wireless devices, such as PDAs and notebooks, the Bluefire software is a compact firewall for small devices and controls all wireless communications. The software provides fine-grained, security controls for all data and services, screens out attacks, and logs all communication activity. Bluefire operates whenever the device is active, providing "always-on" protection. The software monitors all service requests, filters all data packets, and applies the security rules from the security database.

**Competition**

Currently no competitor is yet focused on protecting data from hack attacks at the standalone portable device level and Bluefire has filed patents that create a significant barrier to entry to any company attempting to develop similar firewall and intrusion detection systems on a wireless device. Potential competitors include traditional firewall com-

panies that may attempt to migrate their server or PC-based products, designed to protect corporations using the public Internet, to wireless PDAs. These companies include Checkpoint, Symantec, Network Associates, Network ICE, and Cisco. However, their expertise in developing large server-based firewalls based on IP networks will not translate well to developing small efficient filter engines capable of addressing non-IP based communications across multiple devices.

**Events**

Bluefire Security has met all development milestones to produce a beta version of the software. That software is undergoing beta-testing at several large, reference-able clients. Bluefire Security has closed a Series B round of financing with JK&B Capital and Walker Ventures. This round had a bifurcated close, with \$3.5MM closing May 31, 2002 and \$2.5MM scheduled to close August 31, 2002.

**Chesapeake PERL, Inc.**

College Park, MD - Newark, DE

*www.chesapeakeperl.com*

MD Employees: 8

<b>Management Team</b>	Dr. William Bentley Founder	<b>Cost to State of Maryland</b>
Terry E. Chase President	Dr. Minh-Quan Pham Secretary and Founder	\$500,000
Dr. Nikolai van Beek Chief Scientific Officer	<b>Other Co-Investors</b>	<b>Current Fair Market Value</b>
David C. Davis Plant Manager		
Jeffrey E. Turner Marketing Manager		

**History**

A University of Maryland graduate student developed a low cost manufacturing system for recombinant proteins. In 1999 Minh-Quan Pham and one of his professors, William Bentley, partnered together to form Chesapeake PERL to commercialize this new system. The manufacturing system changes simple insect larvae into efficient mini bioreactors that produce recombinant proteins at high quality while substantially reducing costs. The company is headquartered in the University of Maryland Technology Advancement Program.

**Products**

Chesapeake PERL has developed a method of "mass customization" for recombinant (genetically engineered) protein manufacturing. The company produces proteins using cabbage larvae for therapeutics, diagnostics, industrial enzymes, agriculture and biore-

mediation. Chesapeake PERL has initially targeted specific sectors with smaller, more attainable non-FDA regulated markets. PERL has already demonstrated its manufacturing system and has isolated specific proteins to further demonstrate flexibility and cost competitiveness.

**Competition**

Current processes are highly specific – one process yields one product. Any change in process conditions, raw materials or product can disrupt production and require additional R&D. PERL has overcome technical barriers of efficient scale-up and harvesting time to give it a competitive advantage.

**Events**

Chesapeake PERL has licensed a fully equipped and operating factory donated to the University of Maryland by DuPont. The company has the option to purchase

the Newark Delaware facility at substantially reduced rate.

Chesapeake PERL completed its Series A round of \$1.75 MM in November 2001.

University of Maryland Business Plan Competition Award 2001

Best Biotechnology Company, State of Maryland Incubator Awards 2002

Fortune Magazine's Cool Companies 2002 selected PERL as one of the nations Coolest Biotech Companies.

In Q4 2002 Chesapeake PERL will begin raising its \$3.5 MM Series B round of Financing.

**Claragen, Inc**

Rockville, MD

[www.claragen.com](http://www.claragen.com)

MD Employees: 6

Management Team	Other Co-Investors	Cost to State of Maryland
Mark Zimmer President and CEO	Venture Management Consultants, LLC	\$425,005
Aprile Pilon, Ph.D. Executive Vice President	MD Healthcare Product Development Corp.	<b>Current Fair Market Value</b> \$425,006

**History**

Claragen is a development-stage company formed in 1996. The company has a license agreement and ongoing research relationship with the National Institute of Health.

**Products**

Claragen is a biotechnology company developing novel therapeutic products that are based on recombinant (genetically-engineered) forms of naturally occurring human proteins. The initial focus is on a class of human proteins known as mucosal host defense proteins, which are involved in regulation of inflammation and immunity at mucosal surfaces such as the lung and gastrointestinal tract. Claragen has a research relationship with the National Institutes of Health (NIH) and a license from the NIH to certain technology relating to

the mucosal host defense proteins. The Company's most advanced product is a protein known as CC10, which is being tested in a double-blind, controlled clinical trial for the treatment of a lung disease affecting newborn premature infants. There is no current treatment for the condition, which affects about 20,000 infants annually and is fatal to about 8,000.

**Competition**

Competition for the company's products varies by clinical indication. In asthma, for example, many pharmaceutical products are approved and in common use and Claragen will have to partner with a larger pharmaceutical company. In chronic neonatal lung disease, there are no effective products and the company believes its product will represent a major therapeutic advance.

**Events**

The State of Maryland participated in the Series B round of financing in September 1998. The company also completed a bridge round in which the State invested an additional \$175K.

**CodeRyte**

Bethesda, MD

[www.coderyte.com](http://www.coderyte.com)

MD Employees: 7

Management Team	Other Co-Investors	Cost to State of Maryland
Richard Toren Chairman	Solstice Capital	\$225,000
Andy Kapit CEO & CFO	Washington Tech Partners	<b>Current Fair Market Value</b> \$225,000
Michael Niv, Ph.D. Chief CTO	Commons Capital	
David Yarowsky, Ph.D. Sr. Software Engineer		

**History**

CodeRyte is a software company that uses Natural Language Processing technology ("NLP") to conquer the labor-intensive coding of physician and hospital bills. CodeRyte™ software uses the clinical information contained in the transcribed patient chart to determine the appropriate billing codes. The technology also lends itself to utilization for fraud detection/compliance by quickly comparing or facilitating the comparison of transcribed medical records to the claims submitted by the medical provider.

**Products**

CodeRyte has developed three products that appeal to different end-user markets. One product is delivered in an ASP model. The customer can submit to the engine transcribed records over the Internet. CodeRyte processes

each record in fewer than two seconds or, in batch mode, up to 200,000 per server. The output of CodeRyte can then be imported into any transaction system used by the provider. A semi-integrated product that links CodeRyte to transaction systems is offered by means of an enterprise software license. In a fully integrated installation, CodeRyte generates the super-bill that then enters the provider's transaction system enroute to producing a bill.

**Competition**

CodeRyte currently has a direct competitor in A-Life Medical, Inc., which uses a rules-based approach to NLP. Using this more primitive version of NLP, A-Life must write millions of rules for each and every grammatical, syntactical, semantic and linguistic event. This is a more cumbersome, labor-intensive approach to the technology, which makes it

difficult to scale and adapt. Competition also comes from out-source coding services which are staffed by human coders. This fragmented industry includes mom-and-pop organizations as well as divisions of various sized accounting and consulting firms and web-based service bureaus.

**Events**

CodeRyte is in the process of closing a \$2.5MM Series A round of financing.

CodeRyte has approximately five customers and a large sales pipeline of opportunities.

**Cylex**

Columbia, MD

[www.cylex.net](http://www.cylex.net)

MD Employees: 18

Management Team	Other Co-Investors	Cost to State of Maryland
Judith A. Britz, Ph.D. President and CEO	Early Stage Enterprises	\$575,000
Peter Sottong VP, Operations	The Dinner Club	<b>Current Fair Market Value</b>
Richard Kowalski, Ph.D. Manager, Product Development	Rediscovery Capital	\$599,000
	Women's Growth Capital Fund	
	MDBio	
	Foxwood Capital	

**History**

Cylex was originally formed as a company providing consulting and contract research services to industry and academia. However, in 1998 the company decided to focus all efforts on the development of its platform technology for the assessment of cell-mediated immune function, after a patent on T-cell activation was granted based on preliminary work done through an SBIR contract with the Department of Defense.

**Products**

The company has developed a diagnostic tool, called in vitro CMI, which integrates magnetic separation of blood cells with bioluminescent detection for the measurement of immune system function. Cylex's immunodiagnostic kit measures the level of T cell activation in blood. It has a major application in monitoring AIDS in

humans but also has applications in the disease management of cancer, autoimmunity, and other infectious diseases. The company believes the in vitro CMI assay provides information about cellular immune response in a rapidly processed, easy to use form, which is more amenable to monitoring a disease's course than the antibody measurements alone. The product's advantage is that results are delivered quickly since current testing procedures available take a week to perform.

**Competition**

Competing research assays employ radioactive lymphoproliferation, but these assays are not available or clinically useful. Becton Dickinson and R&D Systems are among the players in this arena.

**Events**

The company has received FDA approval for their assay for use in monitoring immune suppression as of April 4, 2002. This not only includes transplant patients, but also the monitoring of other immune-suppressed patients with illnesses such as HIV, Lupus, etc.

**CytImmune Sciences, Inc.**

College Park, MD

[www.cytimmune.com](http://www.cytimmune.com)

MD Employees: 12

Management Team	Other Co-Investors	Cost to State of Maryland
Lawrence Tamarkin, Ph.D. President & CEO	J. Dorance Trust Entities	\$300,000
Giulio F. Paciotti, Ph.D. VP, Research and Development	EntreMed	<b>Current Fair Market Value</b>
Don Malinowski Product Manager		\$300,000

**History**

CytImmune is an R&D drug delivery company that is currently the only company focused on the biodelivery potential of colloidal gold nanoparticles (colloidal gold has been used safely for over 70 years to treat rheumatoid arthritis). The Company's primary focus is to improve the safety and efficacy of systemically delivered anti-cancer protein biologics and approved chemotherapies through tumor targeting. The Company is developing colloidal gold as a platform technology for drug delivery, gene therapy, monoclonal antibody production and vaccine delivery. CytImmune is dedicated to producing new formulations of drugs to "improve cancer treatment through improved biodelivery of cancer therapies."

**Products**

CytImmune's first patented clinical therapeutic product, a model

for tumor-targeted drug delivery, is tumor necrosis factor (TNF) bound to colloidal gold (cAu-TNF). This first cancer therapy product, which will be ready for a National Cancer Institute sponsored clinical trial in 12-15 months, will lead to a family of cancer therapy products comprised of biologics and chemotherapeutics, such as taxol, bound to colloidal gold for tumor-targeted delivery. Following FDA approval of this product and future products, these new drugs will be sold to treat specific cancers.

**Competition**

Major competitive companies including Alkermes Inc., Alza Corporation, DOR BioPharma, Elan Corporation, plc, Guilford Pharmaceuticals, and Shire Laboratories are focused on using liposomes or biodegradable polymers for drug delivery. Both technologies are best suited for carrying water insoluble molecules, which are released from the carri-

ers all-at-once much like seeds from a seedpod. In contrast, the colloidal gold drug delivery vector is better suited for protein biologics as well as small molecule therapeutics. Because these molecules are bound and carried on the surface of the nanoparticle they provide both rapid biologic action by binding to cell surface receptors and sustained local release as the drug molecules are slowly released from the colloidal gold surface.

**Events**

Two patents were awarded to the Company in the third quarter of 2001, and 22 other patents are still pending in the U.S. and abroad. CytImmune's patents cover the use of cAu for vaccines, monoclonal antibody production, gene therapy and drug delivery. Issued patents cover the treatment of cancers with specific conjugates, including CytImmune's lead clinical therapeutic, cAu-TNF.

**FASgen, Inc.**

Baltimore, MD

[www.fasgen.com](http://www.fasgen.com)

MD Employees: 4

Management Team	Other Co-Investors	Cost to State of Maryland
Albert H. Owens, Jr., M.D. Chairman and CEO	Emerging Technology Partners	\$500,000
Eric Stoer Secretary and Treasurer	CIP Capital	<b>Current Fair Market Value</b> \$500,000

**History**

FASgen, Inc. was formed by four distinguished Johns Hopkins researchers to develop drugs based on their widely acclaimed discoveries related to the mechanisms and roles of the fatty acid biosynthesis (FAS) system. The founders have extensive expertise in the study of FAS and have synthesized over 250 unique small molecule FAS inhibitors and identified several core technologies stemming from their basic research on FAS's role in disease and health.

**Products**

Fatty acid biosynthesis is a vital process in nearly all existing life forms. FASgen has chosen to initially focus its effort in three significant areas: cancer, obesity, and tuberculosis. FAS inhibitors selectively destroy common cancers of the breast, prostate, colon, and lung while sparing the normal tissues. Since cancer cells

have been found to depend on this FAS mechanism for growth, the resultant small molecules produced will specifically inhibit the principal FAS enzyme. FAS inhibitors cause weight loss by suppressing appetite via controls located in the brain stem. This development was highlighted in the June 30, 2000 issue of Science magazine. FAS inhibitors are also selectively toxic to mycobacteria, including multiple drug-resistant organisms that cause TB in humans and paratuberculosis in domestic animals; this compound is furthest along in testing and an IND filing is expected next year.

**Competition**

Various academic and clinical institutions have performed research on the FAS process; for example, Ohio State has initiated a program (funded by the National Cancer Institute) to identify molecules to attack FAS associated with brain tumors. Other institutions are research-

ing possible vaccine formulations to counter the FAS mechanism. These academic efforts can be easily commercialized. In the weight loss category, many non-medical alternatives currently exist. Other forms of competition attack the same problem but take other approaches towards a favorable end solution.

**Events**

FASgen is in the process of closing its Series B financing round.

William McIntosh was hired as the Chief Business Officer.

**Functional Genetics, Inc.**

Rockville, MD

[www.functional-genetics.com](http://www.functional-genetics.com)

MD Employees: 19

Management Team	Other Co-Investors	Cost to State of Maryland
Sharon Mates, Ph.D. CEO	Scientia Health Group, Inc	\$750,000
Lawrence Hineline, CPA Chief Financial Officer	Alafi Capital	<b>Current Fair Market Value</b> \$750,000
Limin Li, M.D, Ph.D. Scientific Director	Sanders, Morris, Harris	

**History**

Functional Genetics, Inc. was formed to develop and commercially exploit a proprietary technology called Random Homozygous Knockout (RHKO) that enables the discovery and functional analysis of genes that are most relevant to human diseases. This patented technology is unique in that it enables the identification and validation of mammalian cell gene function using a procedure that simultaneously inactivates both copies of genes on a genome-wide basis. The scientific founders of the company and inventors of the technologies are Drs. Stanley Cohen and Limin Li, two Stanford scientists. Dr. Cohen is best known for developing and patenting (along with Dr. Herbert Boyer) recombinant DNA technology, which has become the cornerstone of the biotechnology industry. Dr. Mates, the business founder of the company, has been involved in financing and building Biotechnology companies for the past 13 years.

**Products**

The RHKO technology will enable gene function to be correlated in one step with the gene itself. This will allow the discovery of genes that previously were inaccessible as therapeutic or diagnostic targets. The goal of the company is to discover the genes and their function most relevant to major human diseases. Functional Genetics, Inc. has particular interest in using this technology to uncover gene function in the areas of: cancer diagnostics and therapeutics, infectious diseases, immunological diseases, neurological disease, cardiovascular disease and pharmacogenomics. FGI will sell or license information, service, cells, gene targets, compounds, and diagnostic tools. Furthermore, they will further develop a micro-array technology, the GeneDisk, developed and patented by Dr. Li and a colleague.

**Competition**

Companies such as Rigel, Isis, and Hybridon, among many others, use several related technologies. FGI's RHKO approach is dramatically different in that it directly discovers medically important genes on the basis of their function and concurrently validates those genes as targets for drug development. FGI's GeneDisk will compete with the micro-array companies such as Affymetrix, Incyte, and Hyseq. FGI believes the GeneDisk technology has broader applicability at a lower cost than its competitors'.

**Events**

Series A financing closed in December 2000.

Functional Genetics has collaborations with Rockefeller University and SUNY Stony Brook.

The company initiated its \$15-20MM Series B round of funding in 2Q 2002.

**HT Medical Systems (Immersion Corporation)**

Rockville, MD

[www.immersion.com](http://www.immersion.com)

Employees: 162

Management Team	Other Co-Investors	Cost to State of Maryland
Gregory Merrill CEO and President	Maryland Healthcare Corporation	\$250,000
		Current Fair Market Value
		\$262,833

**History**

HT Medical Systems, Inc. (previously High Techsplanations) (HTMS) was founded in 1987 by Gregory Merrill. In June 2000, HTMS moved to Gaithersburg (Montgomery County), Maryland, to accommodate the need for much larger office space for the current employees and planned company growth. Immersion subsequently acquired HT Medical in August 2000.

**Products**

HTMS designs, manufactures, and markets computer-based medical simulators that allow medical personnel to practice medical procedures without placing patients at risk. HTMS has progressed from offering a single product for a single market segment to engaging eight market segments with three different simulation product portfolios, actively sold in North America, Europe, Asia and Australia. Each

of the product lines consists of an ever-expanding menu of software modules that take advantage of a common tactile feedback interface device. CathSim allows medical professionals to practice a wide range of intravenous catheterization procedures. The PreOp Endoscopy simulator prepares professionals to perform various flexible endoscopic procedures such as bronchoscopy and sigmoidoscopy. The PreOp Endovascular product allows physicians to practice angioplasty and other endovascular techniques through the manipulation of simulated guide wires, sheaths, catheters, pacemaker leads, and other devices.

**Competition**

At this time, HTMS is the only significant company that has developed this line of manufactured technology. Other organizations are pursuing similar ideas, but HTMS's current and planned products possess a unique combi-

nation of characteristics, and its competitors are not currently marketing or testing any products that include all of the attributes of the company's products. Most other simulation development groups are within university settings, a few are small companies, and others are large. None of the potential competitors have addressed the market segments that HTMS has engaged, and the competitive technologies that have been demonstrated are generally more expensive and not as realistic.

**Events**

Immersion Corporation, of San Jose, CA, acquired HT Medical in the second half of 2000. DBED has accepted stock in the new entity subject to lock up provisions which have expired.

**Intellivax, Inc. (now ID Biomedical)**

Baltimore, MD - Ville-St. Laurent, QC, Canada

[www.idbiomedical.com](http://www.idbiomedical.com)

Employees: 80

Management Team	Other Co-Investors	Cost to State of Maryland
Anthony Holler, M.D. CEO	Le Fonds de Solidarité Royal Bank Capital Corporation	\$250,000
Todd R. Patrick President and COO	Biocapital Innovatech Montreal	Current Fair Market Value
George H. Lowell, M.D. CSO	Development Bank of Canada Maryland Health Care Product Development Corporation	\$294,808

**History**

Intellivax became a subsidiary of Intellivax International (Canada) in 1998, and DBED's equity position in the old entity was converted into the new company. Intellivax, Inc. was founded in 1995 in Baltimore. Intellivax's enabling technologies, acquired from the Walter Reed Army Institute of Research, Washington, DC provide a broad platform to develop a spectrum of vaccines and related therapeutics for safe and effective delivery via mucosal routes including intranasally. Intellivax product development strategy is to use its unique technologies to develop mucosal vaccines and therapies that provide mucosal as well as systemic immunity and protect against invading microbes before they cause internal disease. Intellivax products have several other advantages over conventional vaccine technologies, providing benefits to both health care providers and patients since they are designed from non-living,

non-replicating, purified components that are inhaled or swallowed rather than injected.

**Products**

Intellivax produces intranasal and oral sub-unit vaccines against shigellosis (bacterial dysentery). These vaccines are WHO and US military priorities that have successfully completed safety and immunogenicity Phase I clinical trials in volunteers. The successful completion of three trials using two distinct products serve as proof of principals that Intellivax vaccine delivery systems elicit mucosal and serum immune responses in people. Advanced clinical trials to demonstrate protection of volunteers against shigellosis after challenge with virulent shigella are underway, and large scale Phase 2 safety and immunogenicity studies are planned at several clinical testing sites in Baltimore, Maryland and greater Montreal. Intellivax is in the process of fil-

ing an IND for a nasally-delivered influenza vaccine following positive results in animals.

**Competition**

Some intranasal vaccines exist against respiratory problems that may not attack the same microbes. Other vaccines are more invasive (injection) and are the currently favored alternative. Treatments for shigella specifically, include rehydration and other not-so-guaranteed methods.

**Events**

ID Biomedical, of Bothell, WA and Vancouver, Canada, acquired Intellivax in May 2001 in a stock swap. The parent company complements Intellivax's own business - both conduct vaccine research. Lock up provisions expired during calendar year 2002.

**Internet Cargo Services, Inc.**

Silver Spring, MD

*www.ecargo.com*

MD Employees: 15

Management Team	Other Co-Investors	Cost to State of Maryland
C.P. Shankar CEO and President	Ruth S. Kahn Estate	\$550,000
	Dealy Investment Group	<b>Current Fair Market Value</b>
	John Puente	\$527,473
	T. Uterburg/Anthony Harris/ C.E. Unterberg Tobin LLC	

**History**

Internet Cargo provides demand chain management solutions for high frequency, high volume, repetitive transaction environments and enables the capture and process of a variety of commercial transactions at the “point of intent” versus the traditional “point of sale.” This patent pending technology saves time and money for participating merchants and their customers.

**Products**

Internet Cargo Services, Inc. provides electronic ordering services for businesses and consumers under the name E::CARGO. The E::CARGO software enables the E::PEN to identify purchases by customers who scan catalogs and other publications. Ordering information is then received from the pen after it has been placed in a docking station. Orders are then dispersed to the respective merchants.

**Competition**

This is the only company using technology of this type. Generally the companies that offer Internet sites and catalogues have maintained the status quo with respect to ordering merchandise. This product also targets those who would not normally make transactions by PC, considering the costs of buying a home computer. One would expect the price points to tend towards negligible, while maintaining some monthly fee to use the software/pen combination.

**Intradigm Corporation**

Rockville, MD

*www.intradigm.net*

MD Employees: 13

Management Team	Other Co-Investors	Cost to State of Maryland
Dr. Martin Woodle CEO and President	Emerging Technology Partners	\$300,000
David Strickler VP, Operations and Finance	Novartis Venture Fund	<b>Current Fair Market Value</b>
Partrick Lu Executive VP, Genomics		\$300,000
Dr. Puthupparampil Scaria VP, Synthetic Vectors		
Casimir Eitner Chief Business Officer		

**History**

Intradigm was founded in mid-2000 by Ms. Jill Glasspool-Malone, Dr. Jim Mixson, and Dr. Martin Woodle. Novartis originally owned the non-viral gene delivery technology, which was developed at Genetic Therapy, Inc., but decided against continuing R&D efforts. The license agreement transferred contingent on funding from Emerging Technology Partners and Novartis’ own venture fund.

reducing costs and improving the success rate. Intradigm does this by exploiting its leading expertise in gene delivery in animals to over-express protein targets and/or to silence them with RNAi directly in animal models of disease. Intradigm’s method skips slow and expensive validation steps by operating directly in the active disease tissues rapidly revealing which proteins provide efficacy.

**Products**

Intradigm Corporation is focused on exploiting its proprietary target discovery and validation technologies to develop new therapeutics for cancer, arthritis and other critical care indications. Intradigm’s approach is unique in that it rapidly discovers and discriminates the proteins that control disease as distinguished from those that only correlate with disease. Disease-control validation of targets enables drug development based on target efficacy

**Competition**

The competitors to Intradigm include commercial entities and academic laboratories. The commercial entities span small to established Biotech companies (such as Copernicus in Cincinnati, Ohio, Targeted Genetics Inc. in Seattle, Washington, TransGene in Strasbourg, France, Valentis Inc. in Burlingame, California, Genzyme Inc. in Cambridge, Massachusetts, Cell Genesis in Foster City, California, and Amgen in Thousand Oaks, California), and divisions of large

pharmaceutical companies (such as GenCell division of Aventis). In addition, a number of academic laboratories worldwide are working to develop new technology for polynucleotide delivery and gene therapy. The in vivo genomics target identification and validation business faces very little competition. Most in vivo gene delivery vector development efforts are proceeding solely for therapeutic applications. Intradigm is establishing a business method patent for this application to protect it from such competition.

**Events**

Intradigm closed on its Series A round of funding in June 2001.

Robert Riley was elected to the Board of Directors.

Intradigm signed an agreement with Direct Gene to provide the delivery technology to improve Direct Gene’s product.

The company is currently raising its Series B round of funding.

**MaxCyte**

Rockville, MD

[www.maxcyte.com](http://www.maxcyte.com)

MD Employees: 16

<b>Management Team</b>	<b>Other Co-Investors</b>	<b>Cost to State of Maryland</b>
Douglas Doerfler President & CEO	VenCap	\$200,000
Joseph Lehnen Chief Financial Officer	EntreMed, Inc	<b>Current Fair Market Value</b>
Eric Richman VP, Corporate Development		\$200,000

**History**

MaxCyte, formed in June 1999, is a clinical stage biotechnology company developing and marketing a platform technology for rapidly loading bioactive molecules into human cells for therapeutic applications and gene target validation for drug discovery. Through partnerships with the world's leading biopharmaceutical companies, MaxCyte leverages its proprietary technology to yield commercially viable therapeutic products. The company has demonstrated a high degree of success in the laboratory, and currently has numerous products in pre-clinical stage and one therapeutic product in Phase I clinical trials. MaxCyte is an independent subsidiary of EntreMed.

**Products**

MaxCyte's precision-controlled cell loading system enables the

modification of a wide variety of human primary cells ("envoy" cells) with virtually any molecule — safely, effectively, and very rapidly. Continuous flow—the key breakthrough—means rapid turnaround and allows for bedside or outpatient treatment. The technology is protected by five U.S. patents issued, and over 35 U.S. and international patents pending. Initially, MaxCyte is focused on three application areas which create the greatest near-term market potential: (1) non-viral gene delivery to enable and advance the efforts of numerous companies developing cell and gene-based therapeutics, and (2) cell-based therapeutic delivery using platelets for targeted drug delivery and red blood cells for enhanced oxygen delivery (ErythroMax™) and gene-based target validation for drug discovery.

**Competition**

In the field of ex-vivo non-viral gene delivery, MaxCyte has identified no direct substitutes or competing methods at comparable production or treatment efficiencies. For ErythroMax™, MaxCyte faces potential competition from "Oxygen enhancement" and "blood substitute" companies. However, these products are only effective for short periods, and now generally targeted at radiation therapy in oncology or high-blood loss trauma situations, respectively. Also, unlike ErythroMax™, blood substitutes may pose toxicity problems.

**Events**

The State of Maryland participated in the Series B round of funding, which closed February 2002.

**MetaMorphix, Inc.**

Savage, MD - Davis, CA - Saskatoon, Canada

MD Employees: 15

<b>Management Team</b>	Linda Yaswen-Corkery, Ph.D. Director, Business Development	<b>Cost to State of Maryland</b>
Edwin Quattlebaum, Ph.D. President & CEO	MaryEllen DeFrancesco Director, Human and Government Affairs	\$500,000
Michael R.N. Thomas, F.C.A. Chief Financial Officer		<b>Current Fair Market Value</b>
Ronald Stotish, Ph.D. VP, Research & Development	<b>Other Co-Investors</b> Genetics Institute	\$1,050,000

**History**

The company was formed by Johns Hopkins and the Genetics Institute and is involved in the commercialization of veterinary pharmaceuticals based on two broad technology platforms: growth factors and immunopharmaceuticals. Growth factors are proteins involved in regulating cell growth and differentiation and offer opportunities for enhanced livestock production efficiency. The company acquired the immunopharmaceutical assets of Biostar Inc., a Canadian based biotechnology company in August, 2000. The acquisition provides the company with enabling carrier protein technology and several mid-stage development products.

**Products**

The company has twelve products under active development based on vaccine, blocker and immunosuppressant technologies to permit natural improvement in production economics for chicken, turkey, swine, and cattle. Trademarks include MyoVax, MyoXtra, OvaMax, NeuterVax and Clean.

**Events**

The company purchased the AgGen division of Celera, Inc. resulting in a doubling of staff. The value of the transaction is estimated at \$30 million or \$17.50/share.

For valuation purposes DBED has discounted that value by 70% to \$5.25/share.

The company graduated from the UMBC Tech Center Incubator and is now headquartered in Savage, MD.

Two Patents were issued regarding its Myostatin technology.

**Navtrak, Inc.**

Salisbury, MD

*www.navtrak.com*

MD Employees: 32

Management Team	Other Co-Investors	Cost to State of Maryland
Ron Hodges CEO and Founder	BaseCamp Ventures	\$350,000
Jim Duncan President	SeaCap Ventures	
Margaret Laidlow Kelso VP and COO	Ruppert Ventures	
Christopher Palenchar CTO		
		Current Fair Market Value
		\$350,000

**History**

Navtrak, Inc. was founded in 1999. The company is an early-stage wireless communications company that has developed and is marketing a web-enabled service providing operators of commercial fleets with real-time access to their vehicles. The solution also reports the location and activities of each vehicle at a given time. Navtrak has an exclusive distribution, marketing and fulfillment alliance with TESSCO Technologies, Inc. This relationship provides Navtrak with exclusive access to a network of independent sales organizations that will be difficult for others to replicate. Each already has an established buying relationship, credit terms and return policies with TESSCO, making it "easy" to buy through TESSCO.

**Products**

A Mobile Manager and an antenna are installed in each vehicle. Additional switches or sensors can also be installed in the vehicle. The Mobile Manager receives signals transmitted from Global Positioning System satellites to determine the location and velocity of the vehicle. These data and any switch or sensor data are transmitted over a wireless modem in the Mobile Manager to Navtrak's Network Operations Center, a network of secure servers. Customers can then retrieve the information from the web site using an Internet browser. With upgraded service, customers are able to send and receive messages to and from a vehicle as well as among vehicles.

**Competition**

There are several competitors in the marketplace, but none has the combination of distribution channel and technology that Navtrak possesses. The list of competitors includes @Road, Inc., Teletrac, Inc. and TracerNet.

**Events**

Navtrak closed an initial tranche of \$2.95 million in its Series A round. Navtrak has expanded the round to a total of \$5 million, with existing investors committing \$1.1 million of the remaining \$2 million not yet funded.

Navtrak has approximately 80 independent dealers in seven regions, 230 customers, 3,250 vehicles under 3-year monitoring contracts, and a 90-day sales pipeline of another 5,000 vehicles.

**NeuralStem Biopharmaceuticals, Ltd.**

Gaithersburg, MD

*www.neuralstem.com*

MD Employees: 4

Management Team	Other Co-Investors	Cost to State of Maryland
Richard Garr President and CEO	SJRJ LLC	\$500,000
Dr. Karl K. Johe Chief Scientific Officer		
		Current Fair Market Value
		\$400,767

**History**

Founded in 1995 and based on the breakthrough Central Nervous System (CNS) stem cell technology invented by Dr. Karl Johe, NeuralStem was created to capitalize upon the commercialization of this patented platform technology.

**Products**

NeuralStem has developed and wholly owns the CNS stem cell technology, a key technology for genetic therapies and drug discovery. The Company has developed and filed patent claims on this technology where stem cells from the rodent and/or human fetal brain and spinal cord areas can be isolated, propagated, and efficiently differentiated to generate large numbers of neurons. For the very first time this technology not only allows for the creation of the many different kinds of neurons which are found in the human CNS, it also allows

for their production in commercially significant quantities and under reproducible conditions.

The Company plans to develop and commercialize several cell-based genetic therapy products for intractable neurodegenerative disorders such as Parkinson's disease, Huntington's and Alzheimer's and spinal cord injuries. Second, through a combination of joint venture, co-development deals and/or manufacturing and distribution agreements function-based live human cell assays will be applied to screen libraries of synthetic and natural compounds. Neuroactive compounds with the potential to treat disorders such as depression, mania, anxiety, schizophrenia and epilepsy will be found. Third, NeuralStem intends to capitalize on its unique cell based expertise to create genomics databases of gene expression patterns seen during neurogenesis and in drug screening assays.

**Competition**

A number of companies have focused on therapies for neurodegenerative diseases such as Parkinson's, Huntington's and Alzheimer's – several companies have been involved in stem cell research.

**Events**

NeuralStem received a \$2.5 million DARPA award (phase 1, over 18 months) with eligibility for another \$7.5 million for phase 2.

The company will launch its first "neurochip" product this fall in a joint venture with Mertigenix. These are theme based microfluidics chips with gene content derived from experiments done with NeuralStem's cells for the Gene Logic Database.

**NexTone Communications, Inc.**

Rockville, MD

[www.nextone.com](http://www.nextone.com)

MD Employees: 20

Management Team	Other Co-Investors	Cost to State of Maryland
Raj Sharma CEO and President	Safeguard Scientifics	\$200,000
Ravi Narayan Co-founder and COO	Riggs Capital Partners	<b>Current Fair Market Value</b> \$85,072
Sridhar Ramachandran Co-founder and CTO	Blue Rock Capital	
	Mid-Atlantic Ventures	
	Core Capital	

**History**

NexTone Communications was founded in February 1998 to design and develop hardware and software for the transmission of data and voice over the Internet. Analog connections would transmit via digital media and not cause a company to rewire its facility. As carriers implement VoIP networks, they are faced with a number of technical issues including network security, signaling interworking and multi-vendor interoperability.

**Products**

Nextone sells three products designed to take advantage of communications via the Internet. The NexTone Multiprotocol Signaling Switch (MSW) solves these issues by enabling carriers and other service providers to directly interconnect their networks with other SIP- and H.323-based networks via IP. The NexTone Core Proxy (CPX) is a carrier class SIP proxy that functions as a centralized route server for VoIP networks. iView is a XML based GUI that allows network operators to graphically view and configure NexTone and associated third party products.

**Competition**

Other companies are seeking entry points as next generation service providers. These providers would use any of the major broadband access technologies to deliver new value added services such as IP Centrex, voice/data Virtual Private Networks (VPN), unified messaging and teleconferencing.

**Events**

In June/July 2002, a Series A-1 round of \$3.5 million was completed and included Core Capital.

**Osiris Therapeutics**

Baltimore, MD

[www.osiristx.com](http://www.osiristx.com)

MD Employees: 71

Management Team	Other Co-Investors	Cost to State of Maryland
William Pursley President & CEO	Friedli Corporate Financial	\$500,000
Donald Fallon Vice President, Finance & CFO	Cambrex	<b>Current Fair Market Value</b> \$104,160
Mark Pittenger, Ph.D. VP, Research	Novartis	
Kerry Atkinson, M.D. VP, Clinical Affairs		

**History**

Osiris Therapeutics, Inc. began operations in December 1992 and is located in the Fells Point area of Baltimore. The Company is primarily engaged in the research and development of novel therapeutics for regeneration and functional restoration of damaged or diseased tissue.

**Products**

Osiris Therapeutics, Inc. is a product-focused, privately-held biotechnology company engaged in the research, development and commercialization of adult human mesenchymal stem cells from bone marrow. The current product development focus is primarily for the regeneration of bone marrow stroma, heart muscle, and meniscus that are damaged by injury, aging and/or disease or disease intervention. Osiris scientists have proven the feasibility of its hMSC approach in several large animal models. Osiris has developed a comprehensive intellectual property portfolio from its early entry into the adult stem cell field. Osiris is

developing hMSC products that will not require an immunological match between the adult bone marrow donor and the patient. This approach represents true "off-the-shelf" or Universal Cell products. Process development is currently underway to manufacture hundreds to thousands of doses of final product from one single bone marrow aspirate.

**Competition**

Osiris believes that its powerful proprietary technological platform combined with an ability to supply commercial quantities of its products in a cost effective manner will have an important impact on its competitive position. In the area of cord blood transplantation support, Osiris is unaware of any products for graft versus host disease ("GVHD") prophylaxis, although there are a variety of marketed products for treatment of GVHD. The Company is aware that in the area of cardiac muscle repair, it faces competition from academic research groups and public and private companies such as Diacrin, BioHeart and Myosix

(acquired by Genzyme). The Company believes the competition in the area of meniscal repair is limited to only two biological products: Cryograft (Cryolife), and Collagen Meniscus Implant (ReGen Biologics'), refined from bovine Achilles tendon. Both have failed to win broad market acceptance.

**Events**

2001 - Osiris and Howmedica Osteonics, a Stryker company, entered into a two-year pre-clinical research project to evaluate the use of hMSCs with orthopedic implants.

2002 - Osiris received two DARPA awards. One is a continuation of a previous project for approximately \$800,000 and the second project was awarded for approximately \$2 million. Both are two year projects.

2002 - Osiris received an award of \$ 2 million from NIST to fund a study on regeneration of the central nervous system with mesenchymal stem cells.

**Panacos Pharmaceuticals, Inc.**

Gaithersburg, MD

[www.panacos.com](http://www.panacos.com)

MD Employees: 18

Management Team	Other Co-Investors	Cost to State of Maryland
Dr. Graham Allaway President and CEO	A.M. Pappas and Associates	\$250,000
Dr. Carl Wild Chief Scientific Officer	Ampersand Ventures	<b>Current Fair Market Value</b>
David Martin, Pharm. D VP, Drug Development		\$250,000
Donald A. Zelm Chief Financial Officer		

**History**

Panacos Pharmaceuticals Inc. originally incorporated in 1999 as a subsidiary of a public diagnostic company, Boston Biomedica, (NASDAQ:BBII). Panacos spun out to become an independent private company in November 2000. Panacos became a fully independent company with the completion of the Series B round, in which the State participated.

**Products**

Panacos Pharmaceuticals is developing the next generation of antiviral drugs for the treatment of Human Immunodeficiency Virus (HIV) infection and other major viral diseases. The Company's proprietary discovery technologies focus on novel targets in the virus life cycle, including the first and last steps of virus infection. The first step in infection is Virus Fusion to a human cell, an important new target for drug development. Panacos has a leading position in this area based on its scientists' proven expertise in fusion inhibitor discovery, combined with a powerful drug discovery technology to iden-

tify novel, orally available drug candidates. The last step in the virus life cycle is Budding of Virus from the infected cell, which results in the production of new viral particles that spread the infection around the body. Inhibition of budding is a new approach for antiviral drug development that is generating considerable interest within the industry. Panacos' lead HIV inhibitor, PA-457, is the first in a new class of HIV drug candidates that act at this stage in the virus life cycle. With an innovative lead compound poised for clinical development, a powerful drug discovery program and a management team with proven drug development experience, Panacos is well positioned to become a major player in the antiviral arena.

**Competition**

While several companies are developing new HIV drugs, most of these are in the same classes as currently approved drugs (reverse transcriptase [RT] or protease inhibitors) and cross-resistance often occurs with drugs that have the same molecular target. To overcome this problem a

small number of companies including Panacos are developing drugs with novel mechanisms of action. Panacos' strategy is to identify orally available, small molecule drug candidates with novel mechanisms of action that are active against the vast majority of HIV strains, including those resistant to approved drugs. These characteristics will put Panacos' compounds in the strongest competitive position.

**Events**

During Q4, 2001, the management team was completed with the hire of Mr. Zelm as CFO and Dr. Martin as Vice President, Drug Development. The Company has grown to a total of 18 employees.

In December, 2001 Panacos moved into its own facility - 10,000 sq. ft. of laboratory and office space that will be sufficient for the Company's operations over several years.

In January, 2002, Panacos closed a \$5MM round of financing with AM Pappas and Ampersand.

**Paratek Microwave**

Columbia, MD

[www.paratek.com](http://www.paratek.com)

MD Employees: 74

Management Team	Other Co-Investors	Cost to State of Maryland
Ali Pourtaheri CEO and President	Morganthaler Ventures	\$575,000
Louise Sengupta Founder, CTO	Novak Biddle Venture Partners	<b>Current Fair Market Value</b>
Somnath Sengupta Co-founder and VP, Government Sales	Investor AB	\$475,893
	DB Capital Venture Partners	
	One Motorola Ventures	

**History**

Paratek Microwave, Inc. is a privately held company established to develop, manufacture and commercialize Electronically Tunable RF (ETRFTM) components and Dynamically Reconfigurable Wireless Networks (DRWiNTM) electronically scanning antennas for the wireless telecommunications industry. The technology was originally developed by the founders while working at the Army Research Labs in Aberdeen, MD.

**Products**

Currently, ETRFTM component products include tunable filters, oscillators and delay lines operating at frequencies between 30 MHz and 40 GHz. DRWiNTM electronically scanning antennas are focused on L-, X-, Ku- and Ka-band systems for terrestrial

deployment (PCS, MMDS & LMDS). Paratek invented a revolutionary new class of materials, Parascan™, from which their fast tuning, passive ETRFTM components and DRWiNTM electronically scanning antennas are fabricated. This would enable broadband wireless communications solutions to be made available to everyone.

**Competition**

Paratek's core materials technology Parascan™ competes with ferrite and MMIC based approaches, neither of which have Paratek's performance and cost advantage. No direct competition currently exists for tunable components or electronically scanning antennas with Paratek's price point and performance characteristics.

**Events**

Paratek raised \$17 million in new financing in late April 2002, bringing the company's total capitalization to \$53 million. The capital raised will be used to further enhance the commercialization of Paratek's product portfolio.

**PEM Technologies, Inc.**

Bethesda, MD

[www.pemtechnologies.com](http://www.pemtechnologies.com)

MD Employees: 7

Management Team	Other Co-Investors	Cost to State of Maryland
Dr. Irving Weinberg Founder, President & CSO	Maryland Angels Council	\$250,000
Dr. Michael Strauss CEO		<b>Current Fair Market Value</b> \$250,000
Steve Yarnell VP, Product Development		

**History**

The fundamental principles of the platform technology were invented by Dr. Irving Weinberg, who left the National Institutes of Health (NIH) in 1995 to found the company. PEM devices are small and easy-to-use versions of positron emission tomography (“PET”) scanners.

**Products**

Patent protected, the PEM devices employ biochemical imaging. With this approach, cancer cells metabolize the radio-pharmaceuticals (i.e., the drugs used with PET scanners) faster than normal tissue. The PEM device recognizes this difference in order to provide clear images of cancer location and extent. The Company’s lead product is a notebook-sized, whole-breast PET scanner (“PEM scanner”) that fits into the existing installed base of over twenty thousand x-ray mammography units. The PEM scanner will improve biopsy precision and allow a surgeon to perform a lumpectomy with the minimum possible excision of normal tissue. The company is developing a similar device for imaging prostate cancer and plans to develop device applications for other types of cancer.

**Competition**

Current imaging devices cannot provide the physician with real-time information about the location and extent of cancer.

**Events**

PEM Technologies closed their \$2.2 MM Series A round on December 6, 2001.

**Platform Logic**

Glenwood, MD

[www.openforcesoftware.com](http://www.openforcesoftware.com)

MD Employees: 12

Management Team	Other Co-Investors	Cost to State of Maryland
Peter Bianco Chairman	Confidential	\$350,000 pending
TJ Tajalli President and CEO		<b>Current Fair Market Value</b> \$350,000
Steve Rice VP, Engineering		

**History**

The company is developing a suite of application firewall software products, called AppFire, which secure high-value web and corporate applications hosted on servers and deployed on desktops. The company will provide an enterprise-wide product suite that is easy to deploy and manage, has predefined policies for popular applications, makes it easy to adapt policies, plug-ins to existing infrastructure, and supports any Windows (only versions that are based on NT i.e. XP), UNIX and Linux application

**Products**

Platform Logic adds policy specification and enforcement mechanisms to each target application, server or end user workstation and then actively monitors that policy to ensure compliance with application-firewall policies. Predefined policy templates will be available for applications, and

Platform Logic makes it easy to adapt policies for environmental-ly unique requirements. AppFire then allows each application to execute in its own confined domain having access to only the resources that it needs to perform its intended function in the customer’s environment and nothing more. The domain paradigm is implemented at the kernel level and cannot be bypassed by any application, including those that are considered privileged by the host operating system. The product will have extensive and scalable remote management, monitoring, auditing, alarm mechanisms, and utilize popular enterprise management consoles, which will make it suitable for wide deployment in any size enterprise.

**Competition**

The application security market can be segmented into two components, authorization security and application security. The

companies that are emerging to provide solutions that secure the way programs access each other and the back-end systems they are linked to are Sanctum, Entercept, and Okena.

**Events**

The company is on schedule to begin beta testing in Q3 of this year. Platform Logic has verbal agreements to conduct beta testing at State Farm, JP Morgan Chase, Mercantile B&T, and the NSA.

**Powerize.com (now Hoover's)**

Linthicum, MD

[www.powerize.com](http://www.powerize.com)

Employees: 268

Management Team	Other Co-Investors	Cost to State of Maryland
Edwin Addison Chairman	Sevenson Environmental Services	\$550,000
Mark Gaertner President		<b>Current Fair Market Value</b> \$324,205

**History**

Founded in January 1997 as KnowledgeLink, Powerize.com was the leading provider of content integration services for enterprise information portals (EIPs) and high-traffic Websites. Powerize.com's unique technology integrates content from any number of Internet- or intranet-based information sources with its own vast collection of 10,000+ newspapers, journals, and other sources. Hoover's, a business information service, integrated this technology into their Website and has since acquired Powerize.com.

**Products**

Through a patent-pending business model, Powerize.com is able to offer its members – and the customers of its affiliates and

enterprise partners - free access to premium content that has never before been available to them for free in one place on the Internet. Powerize.com's network of high-traffic affiliate Websites includes CNBC.com, Fox Marketwire, and Netscape Netcenter, among others. Powerize.com also offers a software package that betters the standard Web search engines currently available.

**Competition**

Sites that integrate content must rely on multiple partnerships and on proprietary search engine technologies to maintain a Web presence. Numerous parties have developed their own approaches to consolidating data into one site.

**Events**

In July 2000 Hoovers.com, from Austin, TX, completed its acquisition of Powerize.com. Terms of the deal combined stock and cash. Under the terms, DBED's entire equity position is no longer subject to any lock up provisions.

**Psychiatric Genomics, Inc.**

Gaithersburg, MD

[www.psygenomics.com](http://www.psygenomics.com)

MD Employees: 30

Management Team	Other Co-Investors	Cost to State of Maryland
Richard Chipkin CEO	Oxford Bioscience Partners	\$500,000
Michael Palfreyman, Ph.D. President	Emerging Technology Partners	<b>Current Fair Market Value</b> \$500,000

**History**

Psychiatric Genomics, Inc. (PGI) is a newly formed genomics-based drug discovery company focused on providing breakthrough therapies for a wide variety of psychiatric diseases through partnerships with pharmaceutical companies and using an integrated platform of genomics-based technologies. Psychiatric diseases and other mental health disorders are the second largest worldwide market with significant unmet medical need and thus represent a tremendous opportunity for the development of new therapeutics.

**Products**

PGI intends to produce innovative drugs for psychiatric disorders by employing a signature-based drug discovery process, as opposed to the traditional method of target-based discovery. PGI's strategy is to screen multiple tar-

gets for drug discovery, combining cell-based assays with normal human neuronal populations with genomic gene expression assays. Since human neurons are the true substrate of psychiatric diseases where one can recognize possible therapeutic effects, these assays assess the molecular signatures of a disease and enable PGI to rationally discover new therapeutics for unknown mechanisms of action and yield breakthroughs in treatment.

**Competition**

Pharmaceutical companies mainly focus on the following CNS disorders (in descending order): depression, Alzheimer's, anxiety, schizophrenia, substance abuse, and eating disorders. Other conditions such as Parkinson's, epilepsy, bipolar disorder, behavioral (ADHD), and post-traumatic stress disorder, obtain relatively less research funding. Still other

neuro-degenerative disorders (such as ALS) or neuro-developmental disorders (such as autism) are not well funded by large pharmaceutical companies.

**Events**

ReNeuron Holdings plc and Psychiatric Genomics Inc. have announced an alliance that will exploit neural stem cells as a drug discovery platform in the field of mental disorders. ReNeuron has granted Psychiatric Genomics a world-wide exclusive license to use specific cell lines within the field of the agreement in exchange for an initial cash payment and warrants over Psychiatric Genomic's equity which become exercisable upon the achievement of certain milestones.

**RF Technologies, Inc.**

Jessup, MD

[www.rfvalve.com](http://www.rfvalve.com)

MD Employees: 5

Management Team	Other Co-Investors	Cost to State of Maryland
Esko Riikonen Chairman and CEO	Denis Seynhaeve	\$249,990
Eric Feldmann President	Calvert World Value Fund	<b>Current Fair Market Value</b>
Michael Vermehren Vice President	GCI Ventures	\$270,612
	Venture Management Consultants	

**History**

RF Technologies Inc. is a privately held U.S. corporation, with a wholly owned subsidiary in Finland. Production is in both the U.S. and in Finland. RF Technologies serves the global market, with sales facilities in North and South America, Europe, Australia and the Pacific Rim. Customers belong to the pulp & paper, mineral processing, industrial intermediates, chemical, mining, power generation, and waste treatment industries.

**Products**

RF Technologies manufactures a full line of On/Off and Control valves for slurry and bulk solids handling services. They solve valve problems related to abrasive, scaling, plugging and corrosive services. The RF Valve, the latest high performance valve design, was introduced to the

market in 1994. The RF Valve has several unique features that solve problems associated with traditional pinch valves. The RF Valve patented design includes an elastomer tube that allows the tube to flex, not stretch, when closing, thus optimizing elastomeric resistance to wear ensuring longer life as well as higher number of cycles. In addition, the elastomer tube contains a wear monitoring system that provides an alert of tube wear prior to failure.

**Competition**

RF competes with all types of valves offered in the marketplace, but its line of RF Valve and aiRFlex products can better withstand the rigors of abrasive, corrosive, and scaling flow media.

**Events**

The State of Maryland invested \$250,000 in the company's Series A equity offering. However, at this time, the Challenge investment has not been converted into shares. Since the company generates in excess of \$500,000 in annual revenues, the State does receive 2% royalties on revenues above the \$500,000 level.

The company expanded its international market to include Australia.

**Sequella, Inc.**

Rockville, MD

[www.sequella.com](http://www.sequella.com)

MD Employees: 13

Management Team	Other Co-Investors	Cost to State of Maryland
Carol Nacy, PhD Founder and CEO	Confidential	\$500,000 pending
Leo Einck, PhD Founder and President		<b>Current Fair Market Value</b>
Maria Marmarinos Executive Vice President of Business Development		\$500,000

**History**

Sequella, Inc., founded in 1997, is a vertically integrated biopharmaceutical company whose initial efforts are focused on diagnosis and treatment of TB. Sequella's technologies address unmet needs of the marketplace to provide diagnostics that accurately detect the presence of TB disease (latent or active), and therapeutics that can be efficiently and effectively administered. Sequella will work with global healthcare agencies to introduce its products into all markets. All five of Sequella's front-line technologies have been supported by one or more grants, totaling more than \$7.9 million.

**Products**

*Transdermal Patch for Active TB* Skin test that detects active TB disease. *Status:* Phase I/II clinical trials complete. Phase III scheduled for Q4 2002/Q1 2003. *Competitive Advantage:* PPD

skin test is unable to distinguish between active TB disease and vaccination or exposure. The Patch detects infectious patients that must be treated. *Market:* 2 billion people are infected with M. Tuberculosis. US market is estimated at \$330 million; global market estimated at over \$700 million.

*Bronx Box for Antibiotic Susceptibility Testing*

A device to confirm TB diagnosis and determine drug sensitivity of the patient isolate. *Status:* Phase I clinical trials are expected to begin 2002. *Competitive Advantage:* Current tests take 2-6 weeks to determine drug resistance; this product can determine antibiotic sensitivity in less than 2 days. *Market:* The estimated global market for this device is over \$300 million.

*Other products in earlier stages of development:*

New chemical entity (NCE) from Ethambutol (EMB)

Therapeutic TB DNA Vaccine  
Drug Compliance Monitor.

**Competition**

New product development for TB has been at a virtual halt for the last 30 years, with few exceptions. Molecular TB diagnostics were introduced in the 1990's, but were not registered as primary diagnostics; they are used to confirm TB diagnosed by antiquated, 100-year old methods of sputum smear or culture. No TB vaccines have been introduced since the BCG vaccine.

**Events**

Tentative closing for Series A round to occur in Oct 2002.

**Solution Technology International**

Frederick, MD - McHenry, MD

[www.stius.com](http://www.stius.com)

MD Employees: 9

Management Team	Other Co-Investors	Cost to State of Maryland
Dan Jonson President & CEO	SQL Star International, Inc.	\$350,000
Randle Rodeheaver Chief Financial Officer	Key Management Group, Inc.	<b>Current Fair Market Value</b>
Urban Jonson SVP Systems Dev. & Operations		\$350,000
Salvatore Mastellone Sr. VP, Program Management		

**History**

Solution Technology International, Inc. (STI) is based in Frederick County, MD and has been in operation since November 1996. STI commenced as a specialized software development service provider to partly fund design and development of its business-to-business-to-consumer, e-commerce solution for the insurance industry.

**Products**

STI is building Web-based scalable e-commerce solutions for domestic and international insurance providers. SurSITE® (B2B2C) solution components tie traditionally separated front-end applications and back-office legacy systems into cost reducing straight-through-processing framework. SurSITE® turnkey solutions have three components: a multi-year SurSITE® Licensing Agreement, a Help Desk, and a Web-hosting Agreement.

**Competition**

In addition to in-house development, which is the preferred avenue by the top 200 insurance companies, there are a number of consulting firms and technology companies that are offering some combination of the Internet, business-to-business and business-to-consumer application solutions that enable e-commerce. STI's management team believes that most of these solution providers currently suffer from at least one, and frequently several of the following common problems: (i) having a poor back office capability for e-commerce, (ii) not providing the full spectrum of Web-enabled modules to support the entire life cycle of insurance processing, (iii) not being scalable and (iv) high maintenance overhead.

**Events**

In 2001 STI was awarded a contract to develop an enterprise solution for the Swiss Pool for Aviation Insurance, Zurich, Switzerland. The pool consists of 21 insurance companies and 4 reinsurance companies. This system is based on STI's SurSITE™ Enterprise Platform.

The company established a System Development and Web Hosting center in Frederick, Maryland.

**Sourcefire, Inc.**

Columbia, MD

[www.sourcefire.com](http://www.sourcefire.com)

MD Employees: 28

Management Team	Other Co-Investors	Cost to State of Maryland
Wayne Jackson CEO	Sierra Ventures	\$550,000
Marty Roesch Founder and CTO	Inflection Point Ventures	<b>Current Fair Market Value</b>
	Core Capital	\$550,000

**History**

Marty Roesch developed an intrusion detection software product called Snort. The user community has helped to refine the open source product over the last three years to the point where the software has become the foundation for an enterprise version intended for larger corporate customers.

**Products**

The current product portfolio consists of elements for monitoring and analyzing network traffic and alerting when suspicious activity is detected. The Network Sensor provides the most effective network intrusion detection system by enhancing the proven Snort technology and adding an easy to use interface, optimized hardware, powerful data analysis, policy management and forensic capabilities. The Management Console provides centralized management of

remote, distributed sensors. The products can accommodate very high data throughput.

**Competition**

This field is saturated with many established and emerging companies. Considering that Snort has been well received by trade magazines and other sources that rate the product versus commercial products, the enterprise versions should be even more robust. Internet Security Systems represents the largest pure competitive threat, with annual revenues of approximately \$200 million. Many other intrusion detection packages are but one offering from larger parent companies, such as Silent Runner from Raytheon, Cisco's own offering, and Network Associates' version of the Haystack software. Small company threats include NFR Security, also located in Maryland.

**Events**

The company completed an initial \$2 million round of funding in February 2002 and has since closed on an additional \$5.5 million. The proceeds will support significant staffing increases, particularly in sales and marketing, as well as continued product research and development.

**Vapotherm, Inc.**

Annapolis, MD

*www.vtherm.com*

MD Employees: 10

Management Team	Other Co-Investors	Cost to State of Maryland
Robert Storey CEO and President	Dr. William Cirksena	\$250,000
William Niland Chairman and Director, New Business Development	Caradyne, Ltd.	<b>Current Fair Market Value</b> \$250,000

**History**

Vapotherm’s high flow air device was originally constructed as a much larger piece that was applied to animal markets. The current management realized its potential for the human markets and thus licensed the basic technology and modified units for hospitals and other institutions. The product also received FDA’s 501(k) approval to market the product.

**Products**

Vapotherm, Inc. has developed a high flow therapy system that can deliver breathing gas at flow rates of 5-40 lpm via a variety of patient interfaces including nasal cannula. Before, Vapotherm, nasal cannula flow was limited to a maximum of 6-8 lpm due to extreme discomfort to the patient at high flows. The patented Vapotherm membrane technology delivers molecular vapor with nearly 100% relative humidity at body temperature. This warmth and humidity allows high flows to be comfortably tolerated by the patient. The Vapotherm 2000i is a safe, convenient, easy to use, and affordable respiratory therapy device that may reduce costs and improve patient outcomes. The warm vapor has many clinical applications within today’s healthcare market including hospitals, long term care, physician offices, hospices, and home care.

**Competition**

Competitors, such as Respironics, produce lines of equipment that include multiple humidifiers and masks that can be interchanged, depending on the patient’s needs, effectively driving continuous air flows to the patient.

**Events**

The initial Challenge investment of \$100,000 converted into equity and an additional \$150,000 was added through the Enterprise Investment Fund in July 2001.

**Wisor Telecom**

Rockville, MD

*www.wisor.com*

MD Employees: 35

Management Team	Other Co-Investors	Cost to State of Maryland
Mark Mendes President and CEO	Keystone Venture Capital Boston Ventures	Early Stage Enterprises SAIC Venture Capital
Vaikunth Gupta Chairman	Riggs Capital Partners Megunticook Management	<b>Cost to State of Maryland</b> \$400,004
Robert Long SVP, Sales and Marketing	TDF - Telecommunications Development Fund Mid-Atlantic Venture Funds Hickory Venture Group	<b>Current Fair Market Value</b> \$785,187

**History**

Operational support systems and service order management are major issues for local exchange carriers and enterprise customers. The company was started to address these issues and keep the customer from having to develop this function from scratch, or perform it manually.

**Products**

The Wisor Service Management Solution (SMS) Suite enhances the operational support systems (OSS) so that the processes for ordering, provisioning, maintenance, repair, etc. are accurately coordinated and performed. The SMS Suite is a solution for any telecom service offering, using any network technology. Large enterprises and communications carriers can manage and control service by ensuring accurate ordering and monitoring of service delivery across the entire order fulfillment lifecycle.

**Competition**

Larger companies provide similar products but are more UNIX-based, have significantly higher price points, or require extensive customization or migration.

**Events**

Mark Mendes, formerly Chief Operating Officer at Net2000 Communications, assumed the President and CEO roles. Furthermore, the sales focus has shifted from the traditional carriers and Competitive Local Exchange Carriers in favor of sales to enterprise customers.

**Yafo Networks**

Hanover, MD

*www.yafonet.com*

MD Employees: 36

Management Team	Other Co-Investors	Cost to State of Maryland
Richard Backus CEO	US Venture Partners	\$250,000
	New Enterprise Associates	
Frank Moody VP, Engineering	Boulder Ventures	<b>Current Fair Market Value</b> \$250,000
	Mellon Ventures	
	Wheatley Partners	
David Korotkin VP, Finance	WorldCom Venture Fund	

**History**

Henry Yaffe, founder of the company, once worked with Anne Arundel County firm Ciena. He has since developed a product line of polarization mode dispersion (PMD) products for the optical fiber market. PMD is a “blurring” of the light signal inside optical fiber caused by the tendency of the two planes of light to travel at differing speeds due to stress on the fiber or deviation from perfect circularity. PMD becomes a significant problem in high-speed optical networks, especially at speeds of 10 Gigabits per second or above. PMD also accumulates over distance, making it a greater challenge over long optical links.

**Products**

Yafo Networks’ real-time adaptive solutions enable optical system vendors and service providers to overcome PMD, one of the most difficult problems facing the deployment of high-speed optical networks on today’s fiber plant. PMD is a critical stumbling block for the deployment of 10 Gigabit per second (Gbps) networks on legacy fiber, and for the deployment of 40 Gbps networks on virtually any fiber.

**Competition**

Companies such as Phaethon and NovaPhase represent more direct competition. Companies such as Big Bear are applying algorithms to the PMD issue as a substitute for a physical compensator.

**Events**

The company recently raised \$22 million in a third round of financing, bringing the cumulative amount of funding to \$61 million.

The Yafo40, Yafo Networks’ compensator for 40 Gigabit per second (Gbps) networks will undergo trials by Deutsche Telekom in a test of 40 Gbps optical transmission systems. The tests will include a laboratory trial on a testbed with PMD generated by Yafo’s higher-order emulator and traditional PMD emulators, as well as a field trial in the DT network at Nuremberg.

**Description**

The Challenge Investment Program (CIP) is a seed program that was designed to invest modest dollars (\$50,000) in pure high technology start-up firms. The program was initiated as a grant program in fiscal year 1989 and modified to an investment program as of January 1, 1994.

During fiscal year 1996, and with the increase of additional staff to the Investment Financing Group, the CIP became more dynamic, responding to the immediate demands of the start-up firms, as opposed to a semi-annual award system. The CIP requires that the firm retain its principal place of business with Maryland for a period of three years. It further adopted a criterion that a Challenge recipient firm should nominally have the potential to be an Enterprise Investment consideration or an attractive equity investment within a two-year period.

All Challenge Investments are 10-year legal agreements having a royalty repayment schedule. Assuming an initial investment, the State is entitled to 2 percent of product sales in excess of \$500,000 a year for a maximum repayment of three times the investment over the life of the agreement. The agreement also reflects that in the event that the Challenge recipient receives outside equity funding, the company must repay DBED 1 percent of the equity raised in excess of \$500,000, again to a maximum repayment of three times the investment. Total exposure of the recipient’s repayment responsibility would be six times the investment over the life of the agreement.

The total of a Challenge Investment was increased during fiscal year 1997 to \$100,000 maximum. Initially, \$50,000 is invested in a seed stage firm based on the successful review of a submitted business plan followed by a verbal presentation by the principal(s). This investment is further increased in increments of \$25,000 based on the achievement of mutually accepted milestones, that would enhance the firm’s attractiveness to the private sector investment community.

The repayment obligation would also reflect these incremental increases in the CIP investment. It has now been adopted, that for an unusually compelling situation, an additional \$50,000 be invested in a Challenge recipient with the approval of the Challenge Advisory Committee, with a maximum of \$150,000 invested in any one recipient. This increase in funding was initiated to further ‘bridge’ the gap between the ‘seed stage’ funding program (Challenge) and the equity program (Enterprise); hence truly fulfilling a financial continuity regarding DBED’s investment strategy. Total exposure of the recipient’s repayment responsibility would subsequently be \$900,000, or three times the maximum investment amount applied to royalties on revenue and outside equity financing.

The repayment obligation was further modified that in the event that the recipient received an outside or private sector equity investment during the effective term of the agreement, DBED would reserve the option to convert the indebtedness of the Challenge recipient to equity. The value of this equity investment would be on the same terms and conditions as determined by the initial outside or private sector investor. It is also the intent to do this equity conversion along with an additional investment through the Enterprise Fund, hence fulfilling DBED’s goal of offering a continuum for an early stage investment initiative.

**Performance**

The Challenge Investment Program has made over 160 investments since fiscal year 1993, resulting in a total investment of over \$7.9 million. Due to the high risks of start-up financing, an impressive 75 percent of the recipient firms are still in business and a modest number of firms have achieved revenues resulting in repayments. Since a more rigorous initial investment criteria have been placed on Challenge recipients, 18 firms have qualified as investments for the Enterprise Investment Fund.

To highlight the effectiveness of the Challenge Program, three companies, started with minimum investments of \$50,000, graduated to the Enterprise Investment Fund and were eventually merged into larger, publicly traded companies. Today the companies employ over 510 individuals and have a combined market capitalization in excess of \$290,000,000.

The other 13 graduated to the Enterprise Investment Fund currently employ over 250 highly compensated individuals and have a cumulative post valuation of over \$100,000,000.

Note: On the following pages, companies in bold indicate graduation to the Enterprise Investment Fund.

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Agentsmith www.asmithinc.com	11/26/01	\$ 125,000 \$300,000 Enterprise Investment Pending	Agentsmith was founded in mid 2001. Its mission is to provide software and services that manage and analyze revenues, forecast demand, segment customers and set prices for sellers of advertising in the media industry. Agentsmith currently offers the first two products in its suite. The first product, Analyzer, integrates all revenue related data, improving a manager's ability to make pricing and inventory decisions. The Maximizer, a station-policy driven tool that optimizes and simplifies inventory management, reduces the cost of selling and managing spots. The third product, Rate Manager, is a powerful price management solution that accurately predicts the optimum pricing for a media outlet's inventory. All current products are offered through an ASP.	Active
A.L. Tech Biomedical www.altechnologies.com	3/12/01	\$ 50,000	A.L.Tech Biomedical, Inc. is an international biomedical research and development company dedicated to developing innovative technologies and products that will improve diagnosis and treatment of patients suffering from genetic-based diseases including cancers. The Company expects to become the first-to-market and sole-provider of a revolutionary technique to test for cancer using a patent protected technology called Solution Hybridization (SH). Using ten exclusive licenses to the patent protected Solution Hybridization (SH) technique, ALTech will enable a significantly more accurate and sensitive cancer detection. ALTech recently successfully completed SBIR Phase I grant with the Dept of Defense.	Active
AMBA Biosciences, LLC	6/25/97	\$ 50,000	AMBA Biosciences, based in Gaithersburg, Md., develops gene transfer, stem cell, and human cell modification technologies. AMBA is focused primarily on the development of gene-based and cell-based therapies, the discovery of novel cytokines, cytokine production, and toxicology testing. AMBA has developed platform gene transfer and stem cell technologies, including a functional bone marrow microenvironment capable of <i>ex-vivo</i> maintenance and amplification of human stem cells. These stem cells retain their ability to differentiate into different myeloid lineages, such as dendritic cells and macrophages. The company has used these differentiated cells to produce high levels of alpha interferon. In addition, AMBA's dendritic cell technology can be used in cancer and AIDS drug development and in the identification of clinically relevant cytokines.	Subsidiary of Clonexpress, Inc.

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
America Tomorrow www.america-tomorrow.com	7/15/95	\$ 50,000	America Tomorrow, Inc. offers consulting and online services in the use of multimedia and telecommunications technologies in learning. Education and corporate clients receive computer-based information, communications, training and applications. The company's products and services are delivered via the World Wide Web on the Internet, and include: America Tomorrow, an upbeat information service containing reports on the good things happening in education and training; EdCentral, an "electronic meeting place" where education professionals can keep up to date with education news and explore other education-related information resources; and customized online and Web consulting.	Active
Antaeus Group www.anteusgroup.com	5/11/93	\$ 50,000	The company sells the SSM 150, a device that grinds and sterilizes medical waste so that the end product can actually be deposited with regular trash. The waste is superheated and ground before fluids and solids are separated by a filter. Although the "box" is priced around \$200,000, it will reduce the costs of hauling medical waste by a factor of 30.	Graduated to Enterprise Investment Fund
Artifact Software www.artifactsoftware.com	6/13/02	\$ 100,000	Artifact is targeting the growing market for software development applications that empower companies to effectively manage and utilize software artifacts. Software artifacts are any technical asset, such as specifications, design models, source code, components, and documentation, deemed necessary for implementing or updating an application. By leveraging existing software artifacts, organizations can better allocate and utilize development resources and more effectively control the spiraling costs and poor visibility of development projects.	Graduated to Enterprise Investment Fund
Audit Systems Company www.auditsystems.com	7/15/95	\$ 50,000	Audit Systems patented EASY 1 DEX system tracks merchandise sold and money collected from vending machines. ASC's Navigator Software is an ASP/sequel server based package that helps manage the entire operations of vending companies, so that customers can visit their vending machines over the internet. Vending machines are remotely monitored with ASC's EASYNET Wireless, which is a private packet switching network to be installed throughout the country.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
bConvergent, Inc. www.bConvergent.net	3/9/01	\$ 150,000	bConvergent's unique technology solutions, provided to small offices nationwide as web-hosted applications, provide customers with all the functionality of an integrated voice-mail, e-mail and wireless paging system, without having to purchase or maintain traditional phone and computer system hardware that often costs tens of thousands of dollars. This has resulted in significant savings for small offices, not to mention the advantages of having a single integrated, maintenance-free communication system for everything from wireless text pages to voicemail, has led to bConvergent's rapid ascendancy on the national level as an "industry creator."	Active
BioArray Technologies, Inc.	1/5/99	\$ 75,000	Patent pending on mass spectrometry proteomics differential display technology, teamed with Johns Hopkins, an Australian organization, eV corporation (detection), and Bio-Rad Corporation (equipment). Additional patents pending of protein labeling and separation on proteomics chip. Inquiries for DNA microarray custom synthesis/services/partnerships grow.	Active
Biological Mimetics, Inc.	3/31/97	\$ 50,000	Biological Mimetics, Inc. is a vaccine development company whose focus is on developing vaccines, diagnostics, and therapeutics against a broad array of human and nonhuman pathogens.	Active
BioMat Sciences www.biomatsciences.com	4/30/01	\$ 150,000	BioMat Sciences develops and commercializes proprietary materials technologies for the oral health marketplace. It is poised to launch Primagen®, an adhesive that strongly bonds materials to teeth. Its other technologies include an advanced composite to replace mercury-containing amalgam, and a system for rapidly manufacturing high-performance materials for tooth reconstruction.	Active
Brassica Protection Products, LLC www.brassica.com	10/3/97	\$ 50,000	BPP was created by scientists at Johns Hopkins University School of Medicine to ensure that products made from plants that provide the anticancer phytochemical sulforaphane (SGS(tm)) are developed and made available to the public under rigorous and standardized scientific conditions following strict food safety standards. BPP markets BroccoSprouts® fresh broccoli spouts in supermarkets in the U.S., Japan and New Zealand and recently launched into Colorado, Brassica Teas, containing measured levels of SGS.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Business Devices www.businessdevices.com	7/22/02	\$ 50,000	The company's solutions enable corporations to monitor real time events in the supply chain from devices such as bar code readers, RFID sensors, satellite location sensors, process instrumentation and inventory tracking units. Linking these devices with enterprise applications such as ERP, Supply Chain and CRM provides immediate, programmatic insight into the location, condition, status and security of inventory, products, assets, and orders. Lowering the cost, time to deploy, and critical skills required to implement this capability provides companies with new levels of competitive advantage, thus enabling streamlined supply chain business processes and new levels of customer service.	Active
Cera Products, Inc. www.ceralyte.com	4/2/96	\$ 100,000	Established in 1993 in Jessup, Maryland, this woman-owned and operated manufacturer produces a line of advanced rehydration and vaccine delivery products that are sold both in the United States and in Central America and Europe. Its key product, CeraLyte, is proven more effective in reducing symptoms of diarrhea and dehydration as it restores fluid, electrolyte and cell balance, to shorten length of illness and help shorten hospitalizations. All the Company's products have been developed and tested with the assistance of medical experts at major medical centers, including physicians at Johns Hopkins, and are registered on the National Supply System and available from distributors nationally as well as from the company directly.	Active
Chitin Works (formerly New Earth Services Inc.)	8/26/96	\$ 150,000	The company's facility will use biochemical technology from UMBI Center for Agricultural Biotechnology (CAB) to produce a special grade of chitosan from chitin, the substance that gives crab shells structure and strength. A Maryland composting company and a Louisiana oil and gas production firm have teamed up to convert crab shells to a special grade of chitosan for oil and gas field drilling. The facility has the capacity to store 25 tons of crab wastes at a time. The plant can handle 3,000 tons of crab waste per year. The company sold out its entire production in the first two years and projects the same for this year even with increased production. The product has now been proven to perform exceptionally well in the field in the initial application. There are twelve other potential applications in the oil and gas drilling industry. The company, through Venture Chemicals, received SBIR funding to research specific enzymes to modify large molecules or polymers of chitosan.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Cylex, Inc. (formerly Biotechnology Transfer) www.cylex.net	4/2/96	\$ 75,000	The company has developed a diagnostic tool, called <i>in vitro</i> CMI, which integrates magnetic separation of blood cells with bioluminescent detection for the measurement of immune system function. Cylex's immunodiagnostic kit measures the level of T cell activation in blood. It has a major application in monitoring AIDS in humans but also has applications in the disease management of cancer, autoimmunity, and other infectious diseases. The company believes the <i>in vitro</i> CMI assay provides information about cellular immune response in a rapidly processed, easy to use form, which is more amenable to monitoring a disease's course than the antibody measurements alone. The product's advantage is that results are delivered quickly since current testing procedures available take a week to perform.	Graduated to Enterprise Investment Fund
Chesapeake PERL www.chesapeakeperl.com	3/16/00	\$ 150,000	Chesapeake PERL offers an improved process of recombinant (genetically engineered) protein manufacturing. Current processes are highly specific - one process yields one product. Any change in raw materials, process conditions, or product can disrupt the entire operation and require much additional R&D. Chesapeake PERL's manufacturing procedure, however, can make virtually any protein product without disrupting the process and without requiring further R&D. The system is easily customized to produce almost any recombinant protein, automatically, at high yield and low cost, with superior quality and biological activity. The company wants to produce recombinant proteins using cabbage larvae or other living hosts. The color-tagged larvae will act as mini-bioreactors via the insertion of an insect virus into the host or larvae. The low cost production allows Chesapeake PERL to enter markets where the high cost of recombinant protein production is prohibitive.	Graduated to Enterprise Investment Fund
D-Fusion, Inc. www.d-fusion.net	11/21/00	\$ 100,000	D-Fusion is a leading provider of web mining infrastructure tools. Its AlertWorks workstation provides information analysts and researchers a powerful workstation for managing near real-time updates from content anywhere on the web. AlertWorks allows an information analyst to subscribe to customized updates from any web page found on the Internet. AlertWorks returns the focus to the analysis of content and removes the inefficiencies in monitoring and looking for content updates. D-Fusion's AlertStream platform provides web content discovery and monitoring services through a powerful and scalable platform. Web mining applications in a variety of sectors take advantage of AlertStream for rapid application development and scalability. Both its tools and platform are in use in a number of leading industry sectors.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
DVIP Multimedia, Inc. www.dvipmm.com	7/1/02	\$ 100,000	The company, recently relocated from a midwestern state, is working to provide real-time image resolution solutions in a number of different industry verticals.	Active
EKA Systems www.ekasystems.com	11/15/01	\$ 100,000	Eka Systems' mission is to be the premier global provider of reliable, low-cost, internet-enabled, embedded wireless networks for monitoring, control, and automation applications. Towards this goal, Eka has developed a distributed wireless network technology platform, EkaNet™ that is uniquely positioned to profit from these rapidly expanding markets. Eka Systems is unique because it can vertically integrate this technology into customer-focused solutions where EkaNet™ provides a distinct competitive advantage. The solutions are comprised of both Eka's growing line of products and products and services from our strategic partners.	Active
Epitaxial Technologies	3/5/97	\$ 150,000	In its fully equipped clean room facility, Epitaxial Technologies manufactures compound semiconductors and value-added wafer products for the wireless and optoelectronic industries. Epitaxial Technologies offers a low cost foundry service as well as value-added semiconductor materials and wafer products. The company also provides a capability to grow highly challenging material structures on GaAs, InP, GaSb and InAs.	Active
EVA Corporation	3/11/99	\$ 50,000	E.V.A. Corporation is a startup medical device company dedicated to designing and building devices intended to be used in the endovascular treatment of abdominal aortic aneurysms. The Company is currently in the research and development phase.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
GetIntegrated.com www.getintegrated.com	9/11/00	\$ 100,000	GetIntegrated provides proactive human resource solutions to small and medium-sized businesses in every phase of the business cycle, to help them more effectively attract, retain, and manage human capital. By streamlining their administrative processes and using one of two, unique solutions-- iComp and iFlex - we allow managers/employers to focus on the core competencies and strategic challenges of their businesses -- the revenue - generating aspects. GetIntegrated's HR professionals deliver value to clients via onsite, call center and online support and communication. GetIntegrated began as a bricks-and-mortar HR outsourcing business in 1998, and has now web-enabled all of its services, so clients and their employees will have access to personal HR data 24x7x365 through customized, corporate portals.	Active
Harta Instruments, Inc. www.hartacorporation.com	4/2/96	\$ 150,000	Harta Instruments is a multi-disciplined, full service, ISO 9001 compliant, electronics engineering company located in Gaithersburg, Maryland. Using the company's patented technologies, they have designed, manufactured, and marketed their line of Microplate Luminometers and Luminometer Reference Plates. Harta's products are available as OEM. Harta Instruments is also a contract manufacturer of bio-medical instruments and other electronics devices.	Active
HT Medical Systems, Inc. www.immersion.com	11/15/95	\$ 50,000	HTMS designs, manufactures, and markets computer-based medical simulators that allow medical personnel to practice medical procedures without placing patients at risk. HTMS has progressed from offering a single product for a single market segment to engaging eight market segments with three different simulation product portfolios, actively sold in North America, Europe, Asia and Australia. Each of the product lines consists of an ever-expanding menu of software modules that take advantage of a common tactile feedback interface device. CathSim allows medical professionals to practice a wide range of intravenous catheterization procedures. The PreOp Endoscopy simulator prepares professionals to perform various flexible endoscopic procedures such as bronchoscopy and sigmoidoscopy. The PreOp Endovascular product allows physicians to practice angioplasty and other endovascular techniques through the manipulation of simulated guide wires, sheaths, catheters, pacemaker leads, and other devices.	Graduated into Enterprise Investment Fund

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
IncenSoft www.incensoft.com	6/5/00	\$ 150,000	IncenSoft offers a full-spectrum of incentive compensation and business performance management software designed to motivate employees, boost morale, enhance employee loyalty and improve productivity. Its flagship product, IncentPower Enterprise, can be implemented throughout an entire organization or at the divisional level.	Active
Infinity Pharmaceuticals	10/12/01	\$ 50,000	Infinity Pharmaceuticals, Inc. is a functional genomics company that applies proteomic technologies to drug target validation and drug discovery. The company will commercialize the target-validation processes, the discovered drug targets and ultimately, therapeutic candidates. The business model that the company will follow is that of a biotechnology company that leverages discoveries from platform technology in order to later become a biopharmaceutical company. The mission of the company is to discover new protein and antibody therapeutics for cancer by using target-driven interaction proteomics technology and coupling it with state-of-the-art high throughput drug screening.	Active
Intellivax International, Inc. www.idbiomedical.com	6/5/00	\$ 150,000	Intellivax produces intranasal and oral sub-unit vaccines against shigellosis (bacterial dysentery). These vaccines are WHO and US military priorities that have successfully completed safety and immunogenicity Phase I clinical trials in volunteers. The successful completion of three trials using two distinct products serve as proof of principals that Intellivax vaccine delivery systems elicit mucosal and serum immune responses in people. Advanced clinical trials to demonstrate protection of volunteers against shigellosis after challenge with virulent shigella and large scale Phase 2 safety and immunogenicity studies are planned at several clinical testing sites in Baltimore, Maryland and greater Montreal.	Graduated into Enterprise Investment Fund
Internet Cargo Services, LLC	10/30/97	\$ 50,000	Company provides electronic ordering services for businesses and consumers. The E::CARGO software enables the E::PEN to identify purchases by customers who scan catalogs and other publications. Ordering information is then received from the pen after it has been placed in a docking station. Orders are then dispersed to the respective merchants.	Graduated into Enterprise Investment Fund

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Intradigm www.intradigm.net	9/22/00	\$ 50,000	Intradigm Corporation is focused on exploiting its proprietary target discovery and validation technologies to develop new therapeutics for cancer, arthritis and other critical care indications. Intradigm's approach is unique in that it rapidly discovers and discriminates the proteins that control disease as distinguished from those that only correlate with disease. Disease-control validation of targets enables drug development based on target efficacy reducing costs and improving the success rate. Intradigm does this by exploiting its leading expertise in gene delivery in animals to over-express protein targets and/or to silence them with RNAi directly in animal models of disease. Intradigm's method skips slow and expensive validation steps by operating directly in the active disease tissues rapidly revealing which proteins provide efficacy.	Graduated into Enterprise Investment Fund
Intralix www.intralix.com	4/18/01	\$ 100,000	Intralix was founded in 1998 to address growing problems in the control and treatment of disease causing bacteria. These problems are presently compounded by public and governmental reluctance to employ new and potentially hazardous chemical agents or solutions born of recombinant technology. Intralytix is using its core bacteriophage technology to develop novel natural products for use in food processing, environmental clean up, sanitation, consumer products, and problems of antibiotic resistance in human therapy. In June 2002 Intralytix received an Experimental Use Permit from the US Environmental Protection Agency for the first in a line of products designed to prevent bacterial contamination of food and food processing plants.	Active
Ipsil www.ipsil.com	11/8/01	\$ 150,000	Ipsil, Incorporated has developed and patented an extremely compact and high performance (line-speed) implementation of a TCP/IP controller. This device integrates a TCP/IP stack along with several commonly used "application layer" services such as a web server, DHCP, FTP, and TELNET. This allows for the direct connection of sensors, actuators, and other such devices to the Internet without the need for any additional processor/controller/network interfaces. Ipsil is marketing to industrial control, automation and embedded systems manufacturers. The company is currently seeking its Series A round of financing.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
<p><b>Knowledge Link, LLC (Powerize.com)</b> www.hoovers.com</p>	4/25/97	\$ 50,000	<p>Powerize.com is the leading provider of content integration services for enterprise information portals (EIPs) and high-traffic Web sites. Offers free, subscription, and fee-based information services. Revenues are also derived from royalties for subscriptions to other publications. Powerize.com's unique technology integrates content from any number of Internet- or intranet-based information sources with its own vast collection of 10,000+ newspapers, journals, and other sources. By also providing robust billing and customer-management services, Powerize.com has become the "instant information infrastructure" for a growing number of high-traffic Websites and enterprise portals. Powerize.com's own fast-growing Website is a showcase for the services that the company offers to its affiliates and business partners. Powerize.com offers its 500,000+ members free, unlimited access to content from more than 2,400 of its premium sources.</p>	Graduated into Enterprise Investment Fund
<p>LearnScape Corporation www.learnscape.com</p>	10/3/97	\$ 150,000	<p>LearnScape is a profitable education technology company that provides technology based training programs for adult learners in companies, job-training programs, welfare to work programs, community colleges, and correctional institutions. LearnScape provides the skillsCOMPASS family of reading, math and work habits programs to prepare individuals to enter the workplace or to advance on-the-job. SkillsCOMPASS offers 163 contextual, workplace oriented lessons with English and Spanish audio in LAN and Internet versions to allow training anywhere and anytime. Xerox Corporation, Ocean Spray Corporation and Aerostructures Corporation are some of LearnScapes customers.</p>	Active
<p>Maxion Technologies www.maxion.com</p>	4/11/02	\$ 100,000	<p>Maxion Technologies, Inc. develops semiconductor lasers specifically designed to enable reliable, broadband, wireless optical communications; the company also develops lasers supporting products for chemical sensing systems and industrial process controls. Based on research commercialized from two institutions, the lasers are able to transmit over free space while preventing components from overheating.</p>	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
<p>Metastatin Pharmaceuticals www.metastatin.com</p>	11/13/00	\$ 150,000	<p>Metastatin Pharmaceuticals is a biopharmaceutical research and development company in the field of cancer, specializing in the development of new therapeutic agents for controlling cancer metastasis and angiogenesis. The Company's initial efforts are focused on the human protein "Uteroglobin" (UG), which research suggests may have potent cytostatic anti-metastatic and anti-angiogenic activity. Research has shown that recominant human Uteroglobin very markedly prevents cancer cells from invading through their local environment -- which is one of the first steps in the sequence of events leading to the spread of cancer, known as metastasis. Furthermore, research has shown that as prostate cells change from early into later stages of cancer, there is a progressive loss of Uteroglobin and its potential protective action against metastasis. Thus, Metastatin intends to develop a set of diagnostic and/or prognostic tests based upon measurements of the amount of Uteroglobin in cells and tissues, which may aid in the prediction of tumor aggressiveness and metastatic potential.</p>	Active
<p>MicroEnergy Systems (formerly TCS, Inc.) www.microenergysystems.com</p>	6/26/96	\$ 50,000	<p>MicroEnergy Systems was founded in 1988. The company relies on combustion of activated carbon for DOD and chemical/biological warfare disposal. It implements microcoal technology that can be used in modular and portable power plants, plus operates more efficiently. Certain military agencies cannot process conventional coal to dispose of chemical weapons, thus the one application. Some utility plants are already employing this technology to produce electricity. Additionally, it has a manufacturing relationship with Beitzel Corporation of Grantsville, MD.</p>	Active
<p>Minerva Pharmaceuticals www.minervapharmaceuticals.com</p>	4/26/99	\$ 50,000	<p>Minerva Pharmaceuticals is a biopharmaceutical product development company dedicated to detecting and eliminating cancer before clinical symptoms occur. Minerva's patented intellectual property is the discovery that some components of the DNA replicating machinery function differently and exist in unique forms in cancer cells and alterations from the normal to the cancer-specific form is the first signal of cancer. The Company is currently developing a family of early and accurate laboratory diagnostic products. In addition, an understanding of how the switch occurs should lead to the identification of new targets for the development of cancer specific therapeutic and prophylactic drugs based on Minerva's technology.</p>	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Neoreach, Inc. www.neoreach.com	3/2/01	\$ 100,000	Neoreach, Inc., a subsidiary of the publicly traded Mobilepro Corp. (OTC BB MOBL), is an advanced communications semiconductor company focused on 3G modems ASICs and RF CMOS. Neoreach's leading edge designs have given it a distinct competitive advantage in the 3G-modem marketplace. As the new 3G networks are rolled out globally, Neoreach is positioned to be both the leading modem supplier to handset manufacturers and supplier of Pico Base Station modems.	Active
Netta Systems www.nettasystems.com	10/19/01	\$ 50,000	Netta Systems is developing a true, multi-level security solution. This proprietary solution has the potential to provide information security throughout an entire system and its associated networks. This complex software architecture, combines mandatory access control, encryption and a proprietary technology that work closely with the operating system to provide the trust not inherent to a computer system.	Active
Neuronautics, Inc.	8/13/98	\$ 50,000	Specializes in the diagnosis and treatment of Alzheimer's disease and related neurodegenerative disorders of the elderly. The company believes that the presence of tau protein in the formation of neurofibrillary tangles indicates some progression towards Alzheimer's. As a result, it hopes to market a drug screening product and eventually find an agent that will slow down or suppress the Alzheimer's disease altogether.	Moved to Illinois
NeuroTrophic Research Corp.	2/27/97	\$ 75,000	Neurotrophic Research Corp. is developing therapeutic neurotrophic factors and cell therapy for the treatment of Parkinson's disease.	Moved to Canada
New Hope Pharmaceuticals	10/23/00	\$ 150,000	New Hope Pharmaceuticals, Inc. (NHP) has developed certain cell-based response technologies that identify which, of the FDA approved anti-cancer drugs, are likely to work on each individual patient --- permitting pre-treatment, response-based, personalization of therapy. It will allow drug discovery at the cellular level rather than at the molecular level. Finally, since new diagnostic categories are being defined on the basis of differential drug response, individual genetics and the company's proprietary gene expression mapping, new knowledge and target gene information is being created on which NHP and its partners can base their design of new drugs.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
NexTone Communications, Inc. (formerly Netoids, Inc.) www.nextone.com	10/7/98	\$ 50,000	NexTone Communications is a leading provider of Voice over Internet Protocol (VoIP) infrastructure for service providers and carriers. NexTone's solution, known as the Virtual Central Office, enables these providers and carriers to interconnect their voice networks in the most simple and cost effective way, allowing them to bridge between existing (H.323 standards) networks and emerging next generation networks that employ Session Initiation Protocol (SIP)-based softswitches, media gateways and application servers. Their main product, the NexTone Multiprotocol Signaling Switch, unifies the various core elements of the network, such as softswitches and application servers.	Graduated to Enterprise Investment Fund
Norris Electric Optical Systems	3/14/95	\$ 50,000	The company develops a device that can be installed in airplane cockpits and can assist pilots during landings, especially in adverse weather conditions such as fog. The company also produces a runway incursion device, placed on the side of a runway to avoid potential collisions on the ground between aircraft.	Active
NuBase Systems, Inc.	6/17/97	\$ 50,000	Provides a complete IDMS solution for the PC environment.	Active
Oncolmmunin, Inc.	7/15/95	\$ 50,000	The company was founded in 1994. The Company has been issued three U.S. patents on its proprietary design for protease inhibitors and fluorogenic substrates. Three PCT applications have now entered into national phases in Japan and Europe.	Active
Paratek Microwave www.paratek.com	7/21/98	\$ 75,000	Currently, Electronically Tunable RF (ETRF) component products include tunable filters, phase shifters and delay lines operating at frequencies between 30 MHz and 35 GHz. Electronically Steered Antenna (ESA) system work is focused on L-, X-, Ku- and Ka-band systems for terrestrial deployment (PCS, MMDS & LMDS). Paratek invented a revolutionary new class of materials, Parascan™, from which our fast tuning, passive ETRF components and electronically steered antennas are fabricated. This would enable broadband wireless communications solutions to be made available to everyone.	Graduated to Enterprise Investment Fund

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Phoenix S&T www.phoenix-st.com	2/11/02	\$ 150,000	Phoenix S&T, Inc. (PST) is an early-stage startup developing microscale, low-cost and disposable polymer tools for protein profiling, a major sector of the proteomics market. The Company's eight patent applications cover microfluidic architecture and microinjection molding techniques. With this platform, the Company creates microfluidic arrays for the mass spectrometry and multidimensional separation analyses of proteins that represent a colossal step change from existing tools. The Company's first product, the mass spectrometer use-once disposable interface, enables the mass spectrometer to produce more definitive results than existing technology by reducing background and improving ion-forming efficiency. This device can be retrofitted to any existing mass spectrometers of different makes. The mid-term product is a multidimensional separation device that aims to replace the cumbersome and often irreproducible 2-D gel separation for proteins.	Active
Plan It!, LLC	10/3/97	\$ 50,000	GIS for economic development	Minor activity; company moved to Ohio, but has some work performed in MD.
Platform Logic www.platformlogic.com	5/28/02	\$ 100,000	The company is developing a suite of application firewall software products, called AppFire, which secure high-value web and corporate applications hosted on servers and deployed on desktops. The company will provide an enterprise-wide product suite that is easy to deploy and manage, has predefined policies for popular applications, makes it easy to adapt policies, plugs-into existing infrastructure, and supports any Windows (only versions that are based on NT i.e. XP), UNIX and Linux application.	Graduated into Enterprise Investment Fund
Plethora Technology www.plethoratech.com	2/7/02	\$ 100,000	The company provides innovative remote access and collaboration software. Secure Virtual Workspace, Plethora's flagship product, delivers an integrated enterprise security architecture (firewall and VPN) with built in user productivity features such as presence-based text and voice conferencing, file access and exchange, and real-time collaboration.	Active
Projected Reality Corporation	1/10/00	\$ 150,000	Projected Reality Corporation was established to commercialize patented technology owned by NASA Goddard and licensed to the Company. The patent is for large flat panel displays using cathode ray technology which the company intends to market to airports, sports complexes, etc.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Reactive NanoTechnologies www.reactivenanotech.com	6/26/02	\$ 100,000	The company has developed a reactive multi-layer foil that once ignited, provides enough heat to melt solder or braze without damaging the components to be joined. This joining method is unique in that the foil provides all the energy needed to melt the solder or braze, eliminating the need to heat the components with a furnace, torch, or laser. This simplifies and speeds the joining process, in many cases cutting the cost of joints in half or possibly more. Additionally, damage is prevented to temperature-sensitive components such as microelectronic devices or polymers, because heating is localized to the interface being joined. This technology covers new applications in the areas of metal-to-ceramic joining and the fabrication of laminated magnetic materials. RNT closed its \$2 million Series A round of financing in July 2002.	Active
RF Technologies, Inc.	3/17/95	\$ 50,000	RF Technologies manufactures a full line of On/Off and Control pinch valves for slurry and bulk solids handling services. They solve valve problems related to abrasive, scaling, plugging and corrosive services.	Graduated into Enterprise Investment Fund
Royer Biomedical (formerly Buford Biomedical, Inc.)	4/24/97	\$ 100,000	Royer currently has one product on the market, Silvadex SR, a paste used to treat hoof injuries in horses, and will soon be releasing its new equine dewormer, Iverdex Equine. The company also has a deep pipeline of products focused on its proprietary controlled release technology, Matrix III, which is a resorbable inorganic/biopolymer composite used for drug delivery.	Active
Sitek Research Lab	2/27/97	\$ 50,000	Study of genetic toxicology. SITEK Research Laboratories has been providing high quality testing services for safety evaluation of chemicals and pharmaceuticals for regulatory submissions for more than fifteen years. SITEK is a fully compliant GLP laboratory having JMAFF certification and AAALAC accredited animal facilities. Their study reports are submitted to regulatory agencies worldwide and have never had a study rejected.	Active
Smart Surfaces, LLC	4/28/00	\$ 50,000	The company has developed a coating for ships and power plants that will effectively ward off zebra mussels and like creatures from adhering to their surfaces.	Active

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
<b>Solution Technology International, Inc.</b> www.stius.com	10/3/97	\$ 150,000	STI is involved in the building and development of a Web-based process infrastructure for insurance providers that ties traditionally separated front-end applications and back-office legacy systems into cost-reducing straight-through-processing modules. Termed DirectINSURE by STI, these modules help consumers understand and purchase insurance products and services as well as manage them after purchase. Initial focus will be on aviation and general automotive segments.	Graduated into Enterprise Investment Fund
Tri-Kor Alloys (formerly Valkor, LLC)	4/13/98	\$ 75,000	Tri-Kor develops and commercializes novel, ultra-high strength aluminum alloys. The alloys are innovated and then sold to OEM's in the sports equipment and transportation industries. Alloys are sold in various semi-finished product forms as well as in fabricated components.	Active
20/20 GeneSystems www.2020gene.com	4/16/02	\$ 100,000	20/20 GeneSystems' product is a proprietary layered proteomics technology. 20/20's technique is among the first for simultaneously analyzing the quantities, "on/off" status, and locations of an entire pathway of proteins from a single tissue sample at the same time. 20/20 began selling its first product in September 2001 after extensive beta testing at over 50 independent biomedical laboratories throughout the U.S. Now sold as a biomedical research tool, the company has identified needed applications of this platform in diagnostics, drug development, toxicology, bio-terrorism defense, forensics, agriculture and food testing. 20/20 has begun using its technology in collaboration with a pharmaceutical company to identify differential proteomes of responders vs. non-responders of their drug candidate.	Active
<b>Vapotherm, Inc.</b> www.vtherm.com	1/5/01	\$ 100,000	Vapotherm, Inc. has developed a high flow therapy system that can deliver breathing gas at flow rates of 5-40 lpm via a variety of patient interfaces including nasal cannula. Before Vapotherm, nasal cannula flow was limited to a maximum of 6-8 lpm due to extreme discomfort to the patient at high flows. The patented Vapotherm membrane technology delivers molecular vapor with nearly 100% relative humidity at body temperature. This warmth and humidity allows high flows to be comfortably tolerated by the patient. The Vapotherm 2000i is a safe, convenient, easy to use, and affordable respiratory therapy device that may reduce costs and improve patient outcomes. The warm vapor has many clinical applications within today's healthcare market including hospitals, long term care, physician offices, hospices, and home care.	Graduated into Enterprise Investment Fund

COMPANY	DATE ENTERED INTO PROGRAM	AMOUNT INVESTED	DESCRIPTION	STATUS
Votara (Formerly Software Solutions Group) www.votara.com	9/20/99	\$ 150,000	VOTARA is automating business processes using Speech Recognition technology. It has delivered these platforms to companies such as Verizon and Utz Quality Foods. The company is currently in its growth phase with a focus on the food services vertical. VOTARA is currently delivering the platform to medium sized and multi-billion a year companies.	Active
Ware On Earth (formerly Hyperspace Communications, Inc.)	2/27/98	\$ 100,000	Software to enable communications between PC and PC, bypassing the server.	Active
Wireless Internet Solutions Corporation www.winternetsolutions.com	3/2/01	\$ 50,000	The company provides an end-to-end wireless field service solution that provides a highly functional, fully configurable and completely integrated wireless application platform to keep mobile workers connected in real-time. This allows for closed loop scheduling, instant dispatch with acknowledgement and remote order completion. Dynamic digital mapping information is also integrated. This enables real time or historical geospatial functionality such as the ability to see the geographic deployment of a workforce, distances, travel times and routing.	Active
Wisdom Builder www.wisdombuilder.com	10/3/97	\$ 75,000	The Wisdom Builder product is intended to process through data culled from multiple sources and convert it into a well packaged and useful set of information. Data can originate from the Internet, through other online sources, and from a repository maintained by Wisdom Builder. Such an intelligent product can help to describe a company's target market, for instance. Wisdom Builder can be run off various computer platforms and employs query capabilities and other features that allow a user or enterprise to effectively exploit information for competitive advantage. One targeted market is law enforcement.	Revenues below threshold
<b>Wisor Telecom, LLC</b> www.wisor.com	4/28/98	\$ 50,000	Operational support systems compatibility is a major issue as carriers and enterprise customers competing in the Bell territories try to interpret data resulting from telephone and data traffic originating and terminating at different points. The company was formed to address this issue and keep firms from having to develop this function from scratch. Previous experience base in technology and in marketing product for sale. The Validator software product beefs up the operational support systems (OSS) so that the reporting for billing, ordering, maintenance, repair, etc. can be accurately reported through existing Bell networks and enterprise customers.	Graduated into Enterprise Investment Fund

**History**

DBED’s initial foray into investing as a limited partner began in fiscal year 1995 when two \$500,000 investments were made in Anthem Capital LLC and Churchill Investment Partners. These private funds emphasized investing in early stage, high technology companies and offered to invest in companies located in Maryland as part of their agreement with DBED. This complemented the Enterprise Investment Fund’s existing initiatives, improved the flow of information between public and private sectors and provided opportunities to co-invest.

During fiscal year 1998, a portion of DBED was spun off to create a minority private sector fund known as the Meridian Management Group (MMG). DBED provided a \$5 million investment to MMG to invest in minority businesses and in economically challenged portions of the state.

On the heels of the two major exits in Gene Logic and Visual Networks (which yielded a windfall of \$45 million in 1999), the state set aside certain monies for the Maryland Technology Development Corporation (TEDCO), “E-Initiatives” (see next page) and investments in additional private venture capital firms. Four Maryland firms were identified for investment (Boulder Ventures, Grotech Partners, Inflection Point Ventures and Steve Walker & Associates) and each firm received a commitment of \$1.5 million.

As a result of the TEDCO legislation, an eighth venture capital firm, Toucan Capital, received a commitment of \$4 million to primarily invest in the life sciences and biotechnology industries. Toucan issued a capital call in August 2001 resulting in a initial funding of \$1 million.

**Performance**

Performance in all funds to date has been severely impacted by the economic downturn of 2001. Virtually every firm took overly pessimistic write downs on assets resulting in negative internal rates of return as of calendar year end 2001. Noted exceptions to this are those firms that made little or no investments in 2000 and 2001. The table below has been prepared outlining the various limited partnerships and their performance as of December 31, 2001.

Company	Fiscal Year	Investment (\$)	Fair Market Value (\$)	Focus	Total Fund Size
Anthem Capital	1995	475,433	1,131,150	IT	\$ 42MM
CIP Capital, LP	1995	500,000	841,650	General	\$ 20MM
Boulder Ventures	1998	1,387,500	883,657	Optics/Biotech	\$ 85MM
Grotech Partners V, LP	2000	1,158,615	611,697	General	\$ 300MM
Steve Walker & Associates	2000	900,000	533,216	IT	\$ 40MM
Inflection Point Ventures	2000	282,166	282,166	IT	\$ 56MM
Toucan Capital	2002	1,000,000	1,000,000	Biotech/IT	\$ 108MM
<b>Total</b>		<b>5,703,714</b>	<b>5,283,536</b>		

**Technology Development Corporation (TEDCO)**

During the 1998 legislative session the General Assembly passed House Bill 7 (Chapter 661, Acts of 1998) establishing the Maryland Science, Engineering, and Technology Development Corporation, now known as the Maryland Technology Development Corporation, or TEDCO. This organization was formed to assist in transferring to the private sector and commercializing the results and products of scientific research and development conducted by colleges and universities of the State of Maryland; assist in the commercialization of technology developed in the private sector; and foster the commercialization of research and development to create and sustain businesses throughout all regions of the State.

No funds were provided at the time the corporation was created; however, TEDCO received a grant of \$642,000 from the Enterprise Fund to provide start-up funding for staff and operations during fiscal year 2000. The fiscal year 2001 budget provided a total of \$7 million from the Enterprise Fund, including a \$2.0 million operating grant to TEDCO.

The fiscal 2001 budget also provided \$5.0 million from the Enterprise Fund to establish a capital fund for investments identified by TEDCO. TEDCO has established two programs using the DBED Enterprise Funds: a Technology Development Investment Fund utilizing \$4 million of the appropriated monies to promote the commercialization of technologies developed primarily in partnership with federal research laboratories and Maryland universities, through seed stage investment; and a University Technology Transfer Support Program to establish a revolving loan program that provides direct support of university technology support projects, using the remaining \$1 million. TEDCO received several proposals from qualified venture capital firms to manage the seed stage investment and subsequently selected Toucan Capital, from Bethesda, MD, as the firm of choice. Toucan is receiving additional matching funds through the Small Business Investment Companies (SBIC) program and is committing at least \$12 million to Maryland-based companies.

**E-Initiatives**

Fiscal 2001 budget amendment number 001-01 appropriated \$9.8 million from the Enterprise Fund for marketing of technology-based industries and initiation of the E-Maryland and E-Marketing initiatives established by Chapter 5, Acts of 2000. An “Internet Project Plan” was drafted for the Secretary of Budget and Management and the Office for Information Technology.



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